

HISTORY
OF THE
N. S. W. CORPS OF ENGINEERS

FROM THE RECORDS.

VOLUME I.
1869-1899.

BY
CAPTAIN C. STUART-CANSELL, V.D.

Author of "RAILWAYS IN WARFARE."

PART II.

PRICE-TWO SHILLINGS.

Sydney:

LIAM BROOKS & Co., PRINTERS AND PUBLISHERS,
17 CASTLEREAGH STREET.

Carte

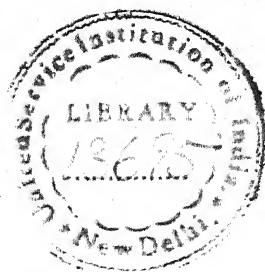


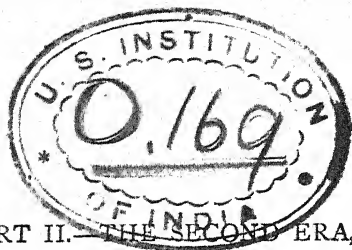
LIEUT-COLONEL THOMAS SAMUEL PARROTT, V.D.

✓
355-092

~~SAT~~

V-75012

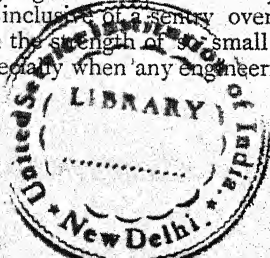




PART II.—THE SECOND ERA, 1879-1889.

CHAPTER IX.

In 1879 the corps was practically divided into two sections, drilling independently, by reason of some men, whose services were maturing for land orders, having to attend parades which in a few cases were but simply a roll-call. Sergeant Masters, having rejoined the Permanent Staff, was for the second time appointed instructor to the Engineers. On the 4th March the following appointments were made to the reconstructed corps:—Mr. John B. Mather as quartermaster-sergeant, Messrs. William Hill and John Cordingley as sergeants, Messrs. William H. Nixon, George Lance and Thomas Phillips as corporals, and Messrs. Charles H. Hund, Henry Coburn and John Shearer as second corporals. At the third encampment, held at the Victoria Barracks for six days during Easter, the Engineers mustered to the number of forty-eight out of a total strength on paper of sixty. At this the first period of regular continuous training for officers and men enrolled under the provisions of the then new military regulations, the weather was far from good, but the troops, being animated, doubtless, by a patriotic desire to qualify themselves for defending their hearths and homes against foreign aggression, attended as well as could have been expected even under the most favourable auspices. The Engineers were brigaded with the field force, the non-commissioned officers and men being quartered in the left wing of the main building of the Barracks, the officers being under canvas with the General Staff in front of the eastern quarters, overlooking the lawn and parade ground. Although the routine at this camp, as compared with former ones, was rather severe, and the discipline as it would have been with regular troops, the men seemed comfortable and happy. In going into camp they were, regardless of the disagreeably wet weather, kept fully exercised in their practical line of work. On the first day, after an inspection by the Commandant and the usual parades, the corps was occupied in making the camp as snug as circumstances would permit, providing kitchens for that portion of the troops under canvas. In addition to having men on canteen and other orderly duties, a guard was furnished by them daily for the Brigade headquarters, including a sentry over the Commandant's tent. This tax upon the strength of a small company was severely felt, more especially when any engineering drills were being carried



out. In spite of this, however, the essentially scientific branch of the force set to work in good earnest, constructing wicker and Jones's iron gabions, fascines, hurdles, shelter-trenches, rifle and gun-pits with sandbag loopholes and embrasures, revetments of various kinds, light fieldworks, sentry-boxes, half-size spar-bridges and a composite-spar signal observatory. In default of better material, the latter structure had to be improvised at haphazard with two poles which had been borrowed. These were certainly too light, and, moreover, weak, for while being hoisted into position they almost broke by their own weight, much to the consternation of the Staff-Sergeant instructor, who had shown grave doubt as to the success of the undertaking under the circumstances. However, the observatory was elevated safely to a height of 80 feet, and securely guyed into position in ten minutes. The corps, for want of material and appliances, had ever since the first day of its existence, nine years previously, suffered much at the hands of the authorities, and only pluck and determination on the part of the rank and file, fortunately composed of intelligent and skilled mechanics, held the corps together, encountered as it had been by so many drawbacks and disappointments. The great parsimony on the part of the Government called forth at this time many adverse comments by the Press, which very lucidly placed the matter before the public by stating that—"The good services the Engineers were able to accomplish were not recognised at their proper value and esteem, the amount of money at the disposal of the commanding officer being altogether insufficient for bringing the men to that state of military proficiency which it was desirable they should attain." "The corps showed, during the encampment at the Victoria Barracks, that, so far as it then professed to go, it was in a most efficient condition, and that thus being able to render invaluable aid and instruction to the force generally, it was surely advisable that further effectiveness in the more advanced branches of its duties, which would be necessarily required during actual service, should not be marred by a pennywise or false economy." The operations of the Engineers at this encampment were watched from day to day with great interest and evident satisfaction by a large number of visitors, who were much surprised at the skilful and workmanlike manner in which the duties were performed. *Apropos* of the mimicry of war exemplified by the excellent earthworks constructed by the mere handful of men comprising the Engineer Corps, just as the sublime and the ridiculous are so frequently separated by the merest film, so the mimic paraphernalia of *bella horrida bella* was made the medium of some light-hearted fun now and again. Quoth one of the many lovely young ladies who stood watching the earthworks being rapidly thrown up:—"I had no idea that soldiers take so much care of themselves

when they go out fighting. Why, they look more like a lot of wombats than soldiers, down in those holes in the ground!" And, as he stroked his pet moustache, her gallant escort looked in her mischievous eyes and said: — "Ah! but, dear girl, if a fellah didn't take dooced good care of himself in time of war, how long would there be a fellah left to take care of you, eh?" From a platform at the top of the observatory, it was at first intended to communicate with the garrison troops stationed at Middle Head, which could be discerned easily about five miles off. A telegram was accordingly despatched to Colonel Charles Fyshe Roberts (afterwards C.M.G. and Military Secretary), commanding the force encamped at Middle Head, requesting that the Torpedo and Signalling Corps be allowed to exchange signals at night with the Engineers. A reply, however, was received to the effect that there were no Chatham lamps available, and also that the Torpedo Corps would be otherwise engaged. Although disappointed, Lieutenant Parrott was determined not to lose the benefit of a good practice, and sent a party over to Mount Rennie one night, when he and Lieutenant Stuart-Cansdell mounted the newly-erected and somewhat frail and shaky observatory, which swayed to and fro during a breeze in an exceedingly unpleasant manner. A capital line of sight having been obtained, the first message was replied to immediately, and a conversation kept up for an hour or more, the whole practice being highly successful. During the latter part of the training certain fieldworks, to illustrate the character of the defence used by the Turks at Plevna when beleaguered by the Russians, were carried out. These fortifications, on a minor scale, were thrown up as shown upon drawings made from sketches taken by General Todleben (the heroic defender of Sebastopol) during the affairs in the vicinity of Plevna, when the Turks were so hotly pressed. These operations on the part of the corps proved to be a special feature as a *finale* to the proceedings at the encampment. Prior to breaking up camp, His Excellency the Lieutenant-Governor and Commander-in-Chief, the Right Honourable Sir Alfred Stephen, P.C., G.C.M.G., C.B., and the Commandant, after inspecting the various works constructed, expressed themselves as being both interested and pleased. At the conclusion of the training, Captain Rowe bore testimony, in flattering terms, to the valuable assistance he had received from Lieutenant Stuart-Cansdell, who as a supernumerary had volunteered his services. A week later this officer was placed upon the paid list, and three months subsequently his commission was re-dated by the Executive Council to the 1st April, in order to specially recognise services rendered by him at the camp. On the 26th May, at the sixth annual meeting of the Rifle Club, now reformed on a basis compatible with the revised regulations, Captain Rowe was elected

president, Lieutenant Parrott vice-president, Lieutenant Stuart-Cansdell secretary, Corporal Nixon treasurer, and Corporal Shearer assistant secretary. With the approval of the officer commanding, a few members were hereafter appointed yearly as a Committee of Management. Of course, under the new *regime* there was no committee for managing the affairs of the corps, the funds having been disbursed, while the admission of honorary members ceased. On the 4th August the corps formed part of a guard of honour at the official landing of His Excellency the Right Honourable Sir Augustus William Frederick Spencer Loftus (commonly called Lord Loftus), P.C., G.C.B. While at parade on the 19th November, a sapper was summarily discharged for insubordination. This was the only dismissal of its kind in the annals of the company, and the dealing with such a case in a sharp and decisive manner had, without doubt, a very salutary effect on the corps generally. The principal marksman for this year was Sergeant John Cordingley. It was notified in September that under the amended regulations the attendance of members of the corps at the two out of four technical lectures during each year would be considered necessary for efficiency. The order referred to did not state by whom the lectures were to be given, nor was provision made to acquire the services of a professional lecturer, so, in order that the efficiency of the corps for the last quarter of this year might not be imperilled, and as an example to the force in general, the officers of the Engineers voluntarily undertook to perform in rotation the necessary tasks, Captain Rowe leading off in December with a paper on "The Duties of a Sapper."

In reviewing the change effected in the military force of the Colony by enrolment under the partially-paid or quasi-militia regulations, it may be here observed that, while the *personnel* of the force suffered a little by the change (excepting with regard to the Engineers), still the physique all round was better, no recruit being admitted without first having undergone a strict medical examination as to height, chest measurement, sight, and strength in wind and limb, desiderata conspicuous by their absence in the old purely volunteer force, where almost everybody presenting himself for enlistment was attested for service. The contrast was notably and very strikingly shown at the two encampments in the early days of the force, particularly at the first one at Ham Common, where many men, contracting complaints by unusual fatigue and exposure to continuous wet weather, very shortly afterwards succumbed. The most marked change, however, was in respect to discipline, so essential to any body of men raised for the defence of their country, and without which an army would virtually become but a mere mob or rabble, and thus defeat its own object. From the start of rifle-shooting contests, the fame of the Engineer Corps in

respect to the great liberality on the part of the commissioned officers, who lavished rewards in kind as well as in money, was such as to induce many mechanics, members of other corps and fond of rifle practice, to obtain transfers to the Engineers, much against the desire of their regimental commanding officers, who in many cases showed great reluctance to sanction the exchange. The tact and judgment, also, on the part of the officers of the corps, who always treated those under them with firmness and yet condescension, had tended in a very great measure to the proverbial harmony in which all ranks composed exclusively of professed mechanics had invariably responded to duty. According to the commentaries of the Press at this time, the Engineers had rapidly acquired the reputation of being a proficient and scientific corps, which prestige to the present day they have always maintained.

CHAPTER X.

In order to give juniors and inexperienced riflemen a chance of winning prizes, it was decided on the 18th February, 1880, at the seventh annual meeting of the Rifle Club, to form the members into two classes, and the prizes were distributed accordingly. Under the system hitherto in vogue many men had been unable even with a liberal handicap to make fair scores when competing with crack shots, hence this rearrangement, which it was presumed would be an encouragement to recruits. Sergeant Hill now undertook the duties of treasurer in lieu of Corporal Nixon. On the 23rd March Lieutenant Parrott delivered the quarterly lecture, the subject being "Lines of Fortification." During the Easter encampment, held again at the Victoria Barracks for six days, both officers and men were quartered under canvas just inside, and to the left of the main entrance gateway. At this the second period of continuous training under the then new system, the work of the corps was very similar to that of the previous year, and executed upon the same ground. The daily Press, in commenting upon the services rendered by the Engineers during this encampment, remarked:—"There is no doubt that the Engineer Corps have had their share of the work whilst in camp, and that they performed it most satisfactorily." "After striking tents works were dismantled, scarcely anything being left about the ground to indicate their having been there at all, their trenches being filled in and their battery demolished, and everything cleared off in a most soldierlike manner." The

rendering of the next quarterly lecture, on the 16th June, fell to the lot of Lieutenant Stuart-Cansdell, the subject being "Railways in Warfare: their general Military use, Defensive and Offensive," which the Press notices state was treated in an exhaustive manner, and proved interesting as well as instructive.

An event of considerable importance, inasmuch as it is indirectly connected with the defences of New South Wales, took place at the Victoria Barracks on the 24th July, when Mrs. John Soame Richardson, wife of the Commandant, laid the memorial stone of the School of Military Engineering, then in course of erection at the rear of the military hospital. The ceremony, being one of great interest to all branches of the military service, was marked with considerable martial display, and witnessed by a large number of persons, including many officers of the forces and ladies. The Engineers, under the command of Captain Rowe, together with the Headquarters' Band, were drawn up, forming three sides of a hollow square. Near and level with the memorial stone, a platform, gracefully decorated, was erected, and at the back of it were groupings of British ensigns around the Royal and New South Wales Arms, while high overhead various flags were unfurled. The gay costumes of the ladies and brilliant uniforms of the officers, grouped together in the centre of the square, formed a pretty spectacle. Captain Rowe, after escorting Mrs. Richardson to the platform, read the following document, a copy of which, enclosed in a bottle, was placed in a cavity in the stone:—"This memorial stone of the School of Military Engineering was set by Mrs. Richardson on the 24th day of July, in the year of our Lord 1880, being the forty-fourth year of the reign of Her Most Gracious Sovereign Victoria, Queen of Great Britain and Ireland and Dependencies and Empress of India; the Right Honourable Lord Augustus Loftus, P.C., G.C.B., being Governor and Commander-in-Chief of the Colony; the Hon. Sir H. Parkes, K.C.M.G., Premier; J. S. Richardson, Colonel Commandant; C. F. Roberts, Colonel Commanding Artillery; W. Wilson, Colonel Commanding Volunteer Artillery; T. Rowe, Captain Commanding Engineers; E. C. Cracknell, Major Commanding Torpedo Corps; R. P. Raymond, Lieutenant-Colonel Commanding 1st Regiment Volunteer Infantry; J. H. Goodlet, Lieutenant-Colonel Commanding 2nd Regiment Volunteer Infantry; W. H. Holborrow, Major Commanding 3rd Regiment Volunteer Infantry; Major W. B. B. Christie, Major of Brigade; Major T. Baynes, Brigade Pay and Quartermaster; J. A. Compton, Captain and Instructor of Musketry; G. F. Dansey, Principal Medical Officer Volunteer Force; James Barnett, Esq., architect; W. Stoddart, contractor; strength of the Engineer Corps—Thomas Rowe, Captain; Thomas S. Parrott and C. Stuart-Cansdell, Lieutenants; four Sergeants, six Corporals, two Buglers, and 45 Sappers (total,

60); Staff-Sergeant Masters, Instructor to the Corps. God save the Queen." Captain Rowe, after expressing regret at the absence of Colonel Scratchley, R.E., from the Colony on that auspicious occasion, said:—"It would be admitted by all that under the system of warfare as carried on at the present day, an Engineer Corps was absolutely necessary. The corps now numbered sixty men all told, and the want of a school had been long felt, and he trusted that the day would come when the corps would be able to produce models of fortifications and other works equal to those made by the same branch of the service in the old country. He regarded the event as a new era in the annals of Australian military life, and thanks, he thought, were due to Colonel Richardson for recommending the Government to erect the building. Although the corps was numerically small, it constituted in these days of scientific warfare a most important accessory to the general service, being composed of professional men and mechanics willing to work and learn, and who, under the new conditions of enlistment, would, he believed, produce results equal to those of the Engineers of England." Captain Rowe, on behalf of the officers of the Engineers, then presented Mrs. Richardson with a handsome silver trowel and a mallet made of myall wood mounted in silver, and the memorial stone was declared to be well and truly laid. Colonel Richardson, in acknowledging the high compliment paid by the officers of the corps to him and Mrs. Richardson in asking that lady to perform the ceremony, referred to the utility of the corps in flattering terms, and said:—"The event was, as Captain Rowe had remarked, an important one, not only in the history of the corps, but in that of the whole force of the Colony, and evinced clearly the liberality of the Government in providing the funds, and its desire also to offer facilities for fitting the forces for the *role* they were intended to play in the defences of the country." Colonel Richardson next described the duties of Engineers, which he characterised as something much beyond those of mere drill, and he contended that warfare had in the most decided manner demonstrated the usefulness of the Engineers in constructing roads, bridges, earthworks and batteries, as well as accelerating the movements of an army, while they also interposed as many obstacles as possible to the progress of its enemies, and he said the school would, doubtless, lead to the increased effectiveness of the corps by giving greater facilities to its members in learning their duties. Colonel Richardson complimented officers and men upon their efficiency, and wished them every success. Upon this occasion Mrs. Rowe handed a silver cup, for the highest aggregate score in the rifle contests of the preceding year, to Sapper William Quantock, who had in 1876, when a member of the South Sydney Rifle Corps, obtained the silver medal of the National Rifle Association.

On the 28th of September, the School of Military Engineering was formally opened with an address by Colonel (afterwards Sir) Peter Scratchley, Royal Engineers, C.M.G.; the Commandant presiding. This building of ashlar dressed stone, rather plain in its architectural features, but substantial, roofed with iron and floored with asphalt, has a length of 110 feet, a width of 20 feet, and a height of 14 feet. At one end there was then an armoury and store, and at the other end quarters for officers, the extensive space intervening being devoted to a lecture and modelling room. This building has since been occupied by other corps, the Engineers or the Field Companies, Corps of Engineers, as they are now styled, having removed to a more extensive dépôt, which is described hereafter in this history. Nearly 100 officers and men were present to listen to Colonel Scratchley's address, some of the former belonging to other branches of the force, having specially come from as far as Bathurst and Windsor. As before mentioned, a series of quarterly lectures had already been started by the officers of the Engineers, and Captain Rowe was to have given his second one on this occasion, but he, in deference to the wish of the Commandant, assented to this rearrangement of the programme. Colonel Scratchley said:— "The opening of this building for the instruction of the men in military engineering was a fresh starting point for the Engineer Corps, and that he felt sure both officers and men would take advantage of the facilities now provided for their practical instruction. He wished to advise them as to their future proceedings, and to give them an outline of the studies they should undertake in the theory and practice of the branch of the colonial military service to which they belonged. Too much must not be expected from them. The existence of a Permanent Artillery Corps, fully officered, rendered it unnecessary that the Engineers should have anything to do with the permanent fortifications, their extension or maintenance, though the officers and non-commissioned officers should receive instruction to enable them, in emergency, to execute these works. The duties assigned to the Engineers were simply to meet the contingency of a landing by the enemy for the purpose of turning the defences of Port Jackson and marching upon Sydney. As he had said some time previously, in a lecture upon the defences of the Colony, the Engineers should acquire a fair knowledge of field engineering, comprising the construction of entrenchments, shelter-trenches, field redoubts and obstructions, and the hasty repair of roads and bridges. Sir William Jervois, in his report, pointed out that an enemy trying to attack Sydney, and unable to enter Port Jackson, would land at one of the adjacent bays, the two vulnerable points being stated as Broken Bay and Botany Bay. The latter was effectually closed by the work on Bare Island. The country between Broken Bay and Sydney was difficult, and covered with

bush, and the roads were bad, and in some places almost impracticable. Sir William Jervois thought that these roads could easily be made impassable to an enemy, both at the landings and at other points, and recommended that at different places shelter-trenches for the infantry, gun-pits for the field artillery, and enclosed redoubts on the flanks should be provided. Houses should be rendered defensible, and every obstacle readily extemporised would have to be made use of. Broken Bay was really the only favourable point from which an enemy could operate, but, as in war, the unforeseen was generally what happened, it would only be prudent to carefully provide for all contingencies. The studies of Engineer officers, and of all other officers, should in time of peace be so directed as to prepare them for their work in war, and they should know sufficient of the work to be performed by other branches of the force besides their own, to prevent their committing mistakes which must prove fatal to the best conceived plan of operations. He was glad to see that here, as elsewhere in Australia, steps were being taken to carry out the higher education of officers of Volunteers. Engineers should acquire a good knowledge of the general principles of field fortification, and the general tactics of field artillery and infantry." The lecturer recommended the study of certain authentic works, in addition to the ordinary drill and text-books, and approved very much of the establishment of a reading-room and military library, of periodical meetings of officers for discussion, of the delivery of lectures on military subjects, and that for a course of instruction in field fortification he recommended that portion of the authorised text-book on "Military Engineering" which dealt with field defences, commencing with those sections referring to hasty entrenchments, shelter-trenches, gun-pits, obstacles and hasty field redoubts, and omitting that section which referred to gabion, fascine and hurdle-making. Remarking that he was pleased to see that arrangements had been made in the new building for modelling in sand, as being the best mode he knew of for quickly teaching men to become directors of unskilled labour, Colonel Scratchley made a rapid survey of the then state of the question of fortification in field operations, and finally saying that they would find minute details of all these works in the text-book he had already mentioned, closed his address with the following valuable advice :—"Let me remark that it will be the fault of the Australian commanders if, when they have to take the field against an enemy who has landed, they have not brought field fortification to their aid to its fullest extent. The mere knowledge of the fact that carefully fortified positions had been selected to resist his progress would render it most improbable that an enemy would attempt to land ; but to gain this degree of preparation no time should be lost. The road tracks and country generally over which the enemy may be

expected to advance must be carefully reconnoitred and studied. Plans giving the fullest detailed information are essential, and I am happy to say that Lieutenant Parrott is making good progress with the maps he is preparing under the direction of the Surveyor General. When these maps are issued, officers of the several arms—and especially the officers of the Permanent Artillery—should be invited to reconnoitre the roads and tracks, to study the ground, and to submit projects of attack and defence for the consideration of the Commandant, who would then issue his instructions to the officers selected to prepare the positions whenever war was declared. The aim should be to leave nothing to chance, and to have everything—absolutely everything—ready before the emergency arose. I am well aware that it is easy to lecture about these things, and that I am asking you to undertake an arduous duty; but what I wish to impress upon you all is that it is not so very difficult, provided you commence in good time, and proceed systematically to work. My services will always be at the disposal of the military authorities to assist in the matter, and I hope to appear again before you as a lecturer on the same subject. At the conclusion of these addresses I always feel considerable doubt as to whether I have not undertaken too difficult a task. I cannot pretend to amuse—the matters I wish you to think over are too serious to be treated lightly. A tremendous responsibility rests upon your shoulders. To you the people of the country have entrusted their security against foreign aggression, and I appeal to you to prove yourselves worthy of the trust. Lastly, I venture to hope that you will carry away in your memories some matter well worthy of reflection; that you will be induced to work hard at your duties; and that you will bear in mind the words of that distinguished military writer, General Hamley, whose remarkable work, "The Operations of War," I have recommended you to read, that 'the preparation of study and thought is essential to skill in war.' The Colonel-Commandant and Captain Rowe expressed their appreciation of the lecture and their concurrence with the suggestions contained in it, and Colonel Scratchley suitably responded.

A rifle match came off on the 16th October, and was won by No. 1 Company of the Naval Brigade. Captain Rowe was now gazetted as Major, his commission having effect from the 1st January of this year. On the 8th December Major Rowe gave his second lecture, conveying practical hints on elementary instruction, including field geometry, and stated it was imperative that every sapper should be competent to carry out any simple fieldwork, and that in future all non-commissioned officers should rise solely by merit, by a thorough technical and practical examination.

CHAPTER XI.

Major Rowe presided at the eighth annual meeting of the Rifle Club on the 9th February, 1881, when Staff-Sergeant Masters was elected assistant secretary in place of Corporal Shearer. Nine days later, in response to a request made some months previously by Major Rowe, and in which the Commandant acquiesced, the Honourable the Colonial Secretary, Sir Henry Parkes, K.C.M.G., sanctioned prizes being awarded to non-commissioned officers and sappers for the production of models in military engineering, the Government having granted an annual expenditure of fifteen guineas from the public purse towards the object as an encouragement to form a collection of works of reference. It was arranged that all models submitted for competition were to become the property of the military authorities, and to remain as exhibits on the premises of the corps for instructional purposes, and also that all winners of prizes should be permitted to wear a distinguishing badge, this concession on the part of the Government having obtained ever since. The officers of the corps for the time being were constituted a Board for the purpose of examining and classifying the competitors' models, for which five prizes were allotted. This Board selected the subjects for modelling, determined the scale to be worked to, and fixed the number of marks allowable in each degree of merit. The school-rooms, excepting when required for lecturing purposes, were, at this period, opened three nights in each week for classes, under the immediate supervision of the sergeant instructor. On the 19th of March there was, at the solicitation of Major R. H. Shakespear, a return rifle match with the Victorian Engineers, the contest taking place upon the respective rifle ranges of the companies at Emerald Hill and Paddington, as formerly, the conditions being—ten men aside, ranges 500 and 600 yards, ten shots at each range, any position, and with the weapons issued by the respective Governments. Major Parnell, a Victorian Engineer Staff Officer, watched the proceedings in Melbourne on behalf of the Sydney Engineers, while Sapper Little, who was on a visit to New South Wales, performed a similar office in Sydney for the Melbourne Engineers. The latter corps, 120 strong, was armed with the Martini-Henry rifle, the former corps, only 60 strong, being armed with the Henry. The weather, much the same upon both ranges, was everything.

that could be desired—fine, clear, with a moderate breeze from the left. The Victorian team won by 25 points. In the first inter-colonial match of this kind, five years previously, New South Wales scored a victory. Several officers and men of the corps visited the Paddington ground, and took great interest in the proceedings, which were rendered all the more exciting by a simultaneous return match with No. 1 Company of the Naval Brigade. Lieutenant Parrott delivered the usual quarterly lecture on the 29th March, the subject being "Hasty Field Entrenchments." In April, for the first time in the annals of the company, there was a competitive examination for two vacancies as corporals, the successful candidates being Sappers John H. Parry and Alexander Sellar, who were equal in marks. The latter, a crack shot, had, a twelve-month previously, been transferred from the 2nd Regiment of Infantry, and proved himself to be a very reliable, exemplary and energetic all-round member of the corps. The candidates were principally examined in elementary engineering, the duties of non-commissioned officers, and infantry drill. An Easter camp, commencing on the 15th April, was again pitched at the Victoria Barracks for six days, the corps, as hitherto, being brigaded with their infantry comrades, the officers finding shelter at their own quarters within the School of Military Engineering, the men being under canvas close by. As usual, they were kept fully occupied, and their operations were carried out, on the ground which had been levelled and improved in rear of the drill-room, by the men themselves. They constructed a section of a redoubt, similar to that kind used by the Turks at Plevna, and which has the outlines of an ordinary redoubt, but differs in this respect, that all possible shelter is utilised to the fullest extent, both for offensive and defensive operations. Previous to Plevna, the ditches of a redoubt were never used for the rifle. But the Turks saw the great advantage that would result from adopting this idea, and immediately availed themselves of it. A small parapet, loopholed, is thrown up on the glacis in front of the ditch, from the counter-scarp of which steps lead up to the cover thus formed. The riflemen are thereby enabled to ascend and descend with ease and rapidity. The redoubt itself is loopholed, and the men in the usual positions there can fire over the heads of their comrades in the ditch. A double fighting line is thus obtained in the same work. At this camp the Engineers also constructed a shelter-trench, providing for a single rank of men, a double rank, and a line of supernumeraries; besides a gun platform for field use. The works, which were all neatly and creditably executed, entailed a considerable amount of labour, and daily received much attention from the numerous visitors. On Easter Monday the sixth match with the Bathurst Corps was contested, resulting in a victory for the country corps by 26 points. In the tabulated statement of

opinions expressed and furnished with the appendix to the report of the Military Defences Inquiry Commission, published early this year, the majority of the members, who were all military experts and of New South Wales, Victoria and South Australia, decided unanimously in favour of the Engineers attached to the field force being one hundred strong, or an increase of forty members, and as obtained under the original Volunteer system. The fourth rifle competition this year was with the Partially-paid Artillery on the 28th May, the Engineers winning by 47 points, but in the fifth match, on the 25th June, with the Permanent Staff, the Engineers lost by 23 points. Four evenings later the quarterly lecture was given by Lieutenant Stuart-Cansdell, the subject being "Defence of Positions by means of Obstacles." The lecturer explained the objects of fortification, and pointed out that, in default of regular defensive works, especially when time was an object, it was imperatively necessary to take proper advantage of any available obstacles or cover. Remarking that these obstacles were divided into two classes, natural and artificial, he said that the former were supplied by the general features and permanent structures of the positions occupied, and would be best observed by studying a topographical map of the country, and that of the latter class the most important were fortresses, bridges and bridge-heads; but that the kind of artificial obstacles to which he wished particularly to direct their attention were those impediments that could be improvised in a very short space of time by any material and means at hand. The lecturer then explained in detail, by numerous diagrams, the construction and use of the following obstructions:—Trous-de-loup or military pits; abatis; timber, wire and iron-band entanglements; pickets; palisades; fraises; barricades; chevaux-de-frise; fougasses and booms; and also the utility of miscellaneous material which might be available as cover. He cited the usefulness of these impediments in various wars, and explained the proper method to be observed when placing them in position and under different circumstances; and concluded by alluding to the fact that the precise and rapid fire of modern rifled ordnance and small arms of the day rendered it imperatively necessary to seek substantial and immediate cover, whether natural or artificial. Major Rowe, on behalf of the company, thanked Lieutenant Stuart-Cansdell for the very concise and thoroughly practical manner in which he had handled the subject of his paper, and hoped those present had paid attention to the instruction they had received, as he firmly believed that a knowledge of these minor obstacles, as a means of defence, was indispensable. On the 17th September a rifle contest with the Partially-paid Artillery resulted in another victory for the Engineers by 49 points. Major Rowe, on the 24th September, lectured on the subject of "Demolitions by means of various explosives fired

by Electricity." At the conclusion of the lecture Major Rowe said:—"He hoped that when the time arrived for a competitive examination in the construction of models a good show would be made, as they were all well aware of and should appreciate the concessions made to them by the military authorities. The officers of the corps, he said, in conducting lectures on technical grounds, were doing their duty; he desired them to do theirs." The last rifle match this year, contested on the 15th October, was won by the Torpedo Corps by 22 points. The next lecture on the subject of "Hasty Entrenchments" was delivered on the 14th December by Lieutenant Parrott, who referred to his previous discourse on field entrenching, saying he could not do better than bring under notice some further features in connection with the subject. He first pointed out the peculiar duties of military engineers on works that were chiefly of a defensive character, and their relation to the duties of other branches of the service, and also the object for which these works were required, and showed that none of the most simple fieldworks could be undertaken without being brought face to face with the problem of the tactics of the modern fighting line; and that for this purpose it was necessary to become familiar with the continual changes in artillery and infantry formations along the front of a line of battle, and also with the improvement in modern guns and small arms. In the course of his remarks the lecturer said that in the practice of his profession he had frequently to pass over the ground which, in the event of an attack upon Sydney from the most vulnerable points, would have to be defended, and that a personal observation of these natural positions in connection with the character and strength of the available defence force would give a better practical idea of the nature of defence works necessary than any teaching in drill or lecture-room could impart. The lecturer then showed in detail, by the aid of diagrams, the favourable conditions to the defence of a position under assumed circumstances. On the 17th December the corps attended the presentation of the Rifle Association prizes at the Garden Palace Exhibition Building. Monthly shooting meetings were now again well attended, the average number of members thereat being eighteen. The first award in connection with the modelling competition was as follows:—Prizes Nos. 1 and 5, *House and Wall placed in a state of defence*, and *Double Gun-pit*, Sapper Henry Collier; 2 and 4, *Trous-de-loup* and *Signal Observatory*, Sapper John White; 3, *Barricades and Chevaux-de-frise*, Corporal Alexander Sellar. As previously mentioned in detail, of seven friendly contests with the rifle during this year with colonial and intercolonial corps, two only had been won by the Engineers. Sergeant John Cordingley again obtained the crown badge.

CHAPTER XII

Several ladies graced the proceedings by their presence at the ninth annual meeting of the Rifle Club on the 4th January, 1882, when Lieutenant Stuart-Cansdell submitted a report of the previous twelve months, which, among other matters, referred to the very liberal response to a request that all members of the corps should subscribe to the club, only two or three men having withheld their support; and that Captain Strong, commanding Cadets, had very kindly seconded the efforts of the officers of the corps by presenting prizes for two consecutive years' competition. Successful competitors both in modelling and shooting were presented by Mesdames Rowe and Parrott with the prizes awarded—Corporal Alexander Sellar, and Sappers William Harries, James Day and William Quantock receiving souvenirs of rifle prowess. Sergeant Hill became treasurer for the third consecutive year, while Corporal Sellar undertook the duties of assistant secretary. Major Rowe, who presided at this meeting, regretted that more time had not been devoted to modelling. He was pleased, however, that a few members had produced some very creditable models, but hoped a larger number would be forthcoming upon future occasions. He also urged that they should not forget that their chief duties, as a body of Military Engineers, lay in the mastering of the numerous works connected with the branch of the Service to which they belonged; that, however necessary infantry drill and good shooting might be, both these were but subsidiary matters in such a corps. Major Rowe concluded by criticising the construction of the various models placed before him in such a manner as to furnish a lesson as to their use. In a shooting contest, on the 21st January, with members of the Permanent Staff, the latter won by 2 points; and on the 4th February, in a match with No. 4 Company of the 1st Regiment of Infantry, the Engineers won by 92 points. On the 17th February, a rifle team, comprising twelve members of the corps, under the supervision of Lieutenant Parrott, proceeded for the third time to the city of Bathurst, the country corps winning by 32 points. Preparations were now being made for the usual Easter training, and, with that in view, as it appeared the camp would be again held at the Victoria Barracks, all the military works which had been constructed from time to time during the year, and left standing on the Engi-

neers' practice ground, were demolished, in order to make room for new ones. On the 18th March a rifle match was fired with No. 2 Company of the 1st Regiment of Infantry, the Engineers winning by 22 points. Upon the same day Major Rowe, accompanied by Lieutenants Parrott and Stuart-Cansdell, paid a visit to the fortifications at Bare Island, Botany Bay. They were kindly conducted around these works in course of erection by Mr. Noble, one of the contractors, to whom they expressed themselves as being both interested and pleased. On the 29th March a lecture was given by Lieutenant Stuart-Cansdell, the subject being "Defence of Military Posts." The lecturer pointed out the general principles of defence, more especially with regard to existing artificial impediments upon the field of operations, such as ditches, hedges, walls, buildings, &c., and also the means whereby weak places of this description could be converted into strong defensive positions; and he produced numerous diagrams, by which he explained the various methods of defence, and concluded by referring to the fortifying of villages and farms. The fourth Easter encampment of the Headquarters' Field Force since its reorganisation on a partially-paid system was, as anticipated, held for six days at the Victoria Barracks. Contrary to general expectations, the weather proved gloriously fine throughout. As upon the previous occasion, the Engineers occupied their own ground, and under the same conditions. Marching into camp with a strength of fifty-two out of a possible sixty, including the three officers, the corps prepared their camp for any emergency of weather—first constructing a covered field kitchen and sentry-boxes, and making everything snug and trim. During the first afternoon a signalling party with heliographs accompanied the 2nd Regiment of Infantry to Botany, another party under Lieutenant Stuart-Cansdell being stationed on Mount Rennie, and a third one at headquarters, in order to establish communication between Botany and the main camp. Part of the system was effected by means of the heliograph, flags being used for the short distances. The remainder of the corps engaged in various engineering duties, chiefly fieldworks, under the direction of Lieutenant Parrott. A gun-pit was constructed and a field-gun brought into position at the south-west angle of the camp, commanding a portion of the Randwick-road. Shelter-trenches and shelter, rifle and charger-pits were also made in positions where they were useful for instructional reference during the training. Hitherto at the annual trainings a great waste of time had occurred by reason of the Engineers having always to first form up with the battalions of Infantry at the short early-morning parades, scarcely any time being available for technical work afterwards, chiefly on account of having to move to and from the dépôt with tools, appliances and material. Very forcible objections

to this arrangement having been represented to the Commandant with due persistency by the officer commanding the corps, it was eventually agreed that henceforth the Engineers should be exempt from such formal attendances. Telephonic instruments lent by Sapper George Henry Clarke, an electrician, were fixed by him, and proved very convenient for the transmission of messages from the Engineer Dépôt to the headquarters' tent, poles and wires having been placed in position for the purpose. Messages were successfully exchanged, but owing to various causes the instrument, one of Crossley's, did not work so well as was anticipated, though the results obtained were quite equal to those got from the ordinary instruments then in use in the city. This addition to the meagre appliances in the possession of the corps proved very useful, especially for operations in the field, and the propriety of purchasing some of these instruments for permanent use was said by the authorities at the time to be worthy of consideration, but nothing more ever came of the suggestion. On the following day Major Rowe, having joined the Brigade Staff, the corps under the immediate direction of its two subalterns, started excavating a ditch 30 x 20 x 8 feet deep, over which it was intended to practise throwing various spans of single and double-lock spar-bridges. In addition to this a gallery was driven for mining operations. Other works were also carried out, including the construction of trenches giving six feet of cover, and the making of revetments of various materials, one class of these being composed of rough logs, loop-holed on a plan originated by Major Rowe during the previous year, the timber available in the Australian Colonies being specially adapted to this style of defence. A signalling party also went out beyond Mount Rennie, in order to convey intelligence of the whereabouts of the Engineer section, which had been despatched to Botany in company with the 1st Regiment of Infantry, messages being received and communicated to the headquarters' staff. The whole of the men worked with a will, and were kept industriously employed by Staff-Sergeant James Masters. On Easter Monday all the works which had been taken in hand were completed, inclusive of a double-lock spar-bridge. Early in the evening the signalling detachments of the corps were ordered to hold themselves in readiness to proceed as directed in the event of an alarm and were therefore busy preparing their apparatuses. The remainder of the corps under Lieutenant Parrott, upon the alarm being sounded from headquarters at a little after nine o'clock, hurried off, as pre-arranged, to act the part of the enemy. But, leaving the Barracks at the same time as the defenders, they had, in order to evade them, naturally to proceed at the double by a more circuitous route, so as to quickly take up a position beyond the Randwick racecourse, for the purpose of advancing upon the ground held by the defending force. Never could anyone of those

engaged in this affair forget the march at the double all the way from the Barracks to the tollgate, near the junction of the Randwick and Bunnerong roads. Presumably, in order not to surprise the camp by the movement of bodies of men, the Engineers, who were to act as the enemy, had not been apprised whether they should leave camp or not prior to an alarm being given, hence this rush to the front. They formed, of course, but merely a skeleton attacking force, and were, on arrival at the assigned position, divided into three parties, one of which was posted on the Randwick-road, another on the Bunnerong-road, and the remaining one on the right of the Causeway dam. When the disposition of this force had been completed, a simultaneous advance was made along the whole line. Very soon the pickets of the defenders were felt and they shortly and gradually retired before the enemy, the firing lasting until all ammunition had been expended, and thus the mimic battle terminated. The movements were much interfered with by a dense fog, which came on immediately after the attack commenced. This and the smoke combined darkened the atmosphere to such a degree that objects but a few yards away could not be distinguished, and as, also, the ground over which the operations were being conducted consisted principally of swamps and dams, and was very broken, it may be imagined, therefore, that a few accidents occurred through the splashing and struggling of the men and horses when wading through lagoons of varying depths, and under such conditions. This affair lasted until nearly 3 o'clock on Tuesday morning; but, notwithstanding the fatigue entailed, the corps went to work at the usual hour with a will that was highly commended. Being told off into sections, they proceeded with wire entanglements, trous-de-loup, blockhouses, and searched for water by means of Norton's tube-well apparatus. Upon the sixth and last day the corps was engaged in the construction of a gun-epaulment, barrel-pier bridging, and mining. In the afternoon necessary preparations were made for departure, the men being engaged in demolishing works, taking down telephone poles and wires, striking tents, returning plant to store, and clearing up camp. The explosion of a mine was effected just prior to the dismissal of the company; but, owing to the charge being less than the working one provided for in the regulations, the result, though satisfactory as a demonstration of the utility of mining, was not so sensational as expected by those not in the secret of the affair. The truth is, Major Rowe, bearing in mind the first essay in mining at Campbellfields in 1874, felt rather chary of risking any accident in the confined space of the dépôt, which was adjacent to so many houses, and so he only permitted one-half of the charge which had been calculated as necessary. A dummy, rigged out in a sapper's old uniform, was placed in a sitting posture directly over the mine which was fired by electri-

city. Upon turning the handle of the dynamo, a slight quiver was perceptible in the ground, and amidst a little smoke the dummy was seen to rise quite gracefully to a height of about twelve inches, and then to reseal itself in an attitude of languid indifference. Looked at from every standpoint, this, the sixth encampment, which was under the supervision of the Acting Commandant, Lieutenant-Colonel W. B. B. Christie, was unanimously acknowledged to be the best training of the military forces of the Colony up to this date. In a rifle match with the Partially-paid Artillery on the 15th April, the Engineers won by 48 points, and on the 8th May, in a similar contest with a team from H.M.S. Nelson, the Engineer Corps were victorious by 124 points. During the same month two other matches—one with the Parramatta Corps, 3rd Regiment of Infantry, and the other with No. 1 Company, 1st Regiment of Infantry—were both won by the Engineers by 34 and 6 points respectively. On the 26th June Major Rowe gave the usual quarterly lecture, the subject being "Minor Fieldworks." One Saturday an amusing incident occurred on parade. Major Rowe, while haranguing his men and exhorting them to hold themselves up more like soldiers, suiting the action to the word, smartly drew himself up, and, whipping his sword out of its scabbard, displayed but only two inches of cold steel. The situation was, indeed, so comical that discipline was for a few moments suspended, as all present could not refrain from smiling at the *contretemps*. The smiles gradually merged into laughter, which soon became general, the gallant major himself heartily joining in the merriment, although it was a joke at his own expense. Major Rowe had, a few weeks prior to this affair, broken an old sword, which, as a rule, he used at night only, and kept at the dépôt. Forgetting, apparently, the accident, he had on this occasion, in default of another weapon, hurriedly adjusted the damaged one to his belt. In another rifle match with the Bathurst Corps on the 2nd July, the Engineers won by 39 points, and made the highest score (525 points) with ten men that had ever been accomplished in any preceding contest in the Colony. On the 19th July, in a shooting test with the Parramatta Corps, 3rd Regiment of Infantry, the country men were successful, winning by 13 points. At the next lecture, delivered by Lieutenant Parrott on the 27th September, several visiting officers, non-commissioned officers and men of the metropolitan forces were present. Lieutenant Parrott first alluded to the necessary training for the study of science and art, and to the opportunities for bringing the several theories under the test of practical experiment, more especially with regard to military life, as every year brought about some great change in the rifle, the field-gun, the gun of position, the trench, battery-formation, and a thousand other things which made the British army of to-day a very different piece

of mechanism to what it was in the time of the Crimean War ; and yet, the lecturer remarked, this change was not altogether by reason of the knowledge obtained by its own experimental tests, but more from the teachings resulting from the conflicts of European armies. What was necessary was the acquirement of such a knowledge of military engineering as would enable the adoption of the best plan, and the securing of the best means and conditions, under the light of the most modern experiments, when designing and carrying out the various requisite works of defence. Dwelling at some length upon the Russian system of fighting at Plevna, and also upon the probable further improvements in small arms and artillery, the lecturer said, concerning the Egyptian campaign, that it would be extremely interesting to get the details of the extraordinary instance of the assault of a position strongly entrenched, in which the usual order of things was so completely reversed that the defenders' losses were ten times greater than those of the attacking force. Referring to a reconnaissance of the country on the west side of the Bunnerong-road, in the vicinity of the Randwick racecourse, made by him during a recent working parade of the corps, at which a single-lock spar-bridge was thrown across a creek in this locality, the lecturer explained the defence of the position, and hoped further opportunities would be afforded them for obtaining instruction in the defence of this part of the country. Three more rifle matches took place in September, the Royal Marines being defeated by 57 points, the Engineers in their turn being vanquished in contests with the Parramatta Company, 3rd Regiment of Infantry, and the Partially-paid Artillery by 31 and 2 points respectively. On the 13th December the twelfth quarterly lecture was given by Lieutenant Stuart-Cansdell, who selected for his subject an extensive one—that of military bridging, embracing a wide field of construction in military engineering. Limited time upon this occasion compelled him to confine himself more particularly to the elementary principles, types and classes of structures, it being his intention, he said, to continue the subject in detail at some future meetings. The lecturer then concisely pointed out the general principles of construction in portable and improvised bridges, and dwelt at considerable length upon the materials employed in the field, especially in cases of emergency, and also upon the structural parts. With regard to portable bridges, he said that each British army corps carried 100 yards of pontoon and 20 yards of trestle bridge, also trussed planks and girders, for this particular service ; and that improvised bridges were built of crib-work, gabions, fascines, hurdles, ladders, and various composite structures, in default of the usual requisite material. The lecturer next referred to the different kinds of trestles employed, also to the several classes of frames, and concluded with remarks concerning suspension, tension and floating

bridges. The subject was illustrated by coloured drawings, by reference to models, and also by sketches upon a blackboard, and proved to be very instructive. Major Rowe said he was extremely pleased to find that these lectures had assumed such a practical form, and complimented Lieutenant Stuart-Cansdell upon the manner in which he had worked up his subject. In the musketry course for this year the corps regained the position it held in 1874, being fourth in merit with the whole force. Sergeant Cordingley was, for the third time, the best shot in the company, being only one point behind Lieutenant C. S. Guest, of the 3rd Regiment of Infantry, who had proved himself to be the premier shot of the military force. Ten other members of the Engineers received marksmen's badges. It will be observed that, as previously mentioned in detail, no less than thirteen rifle contests were engaged in during this year, of which eight were won by the Engineers. These numerous meetings were mainly due to the energy displayed by the assistant secretary, Corporal Alexander Sellar. Some hitch having occurred with regard to the non-appropriation of the money for modelling prizes, members being apparently indifferent and lax in forwarding their exhibits, the vote lapsed, and special arrangements had to be made to extend the time of competition, and to obtain a refund from the Treasury, which was only managed after some considerable difficulty.

CHAPTER XIII.

At the tenth annual meeting of the Rifle Club, on the 4th of January, 1883, there was a large gathering of members, as well as ladies and other friends interested in the affairs of the corps generally. Major Rowe, who presided, referred to the construction of models of various military works, and said:—"He regretted that, comparatively speaking, so little attention had been paid to this important matter. After a trial extending over two years, it was very apparent to him that the prizes offered by the Government (fifteen guineas per annum) were not sufficient inducement, and he would represent this matter to the authorities, and, if possible, obtain a larger amount for distribution in future competitions. Their own officers were desirous of assisting in this direction, and perhaps, also, with the aid of officers of the metropolitan corps and other friends—as in the case of prizes for shooting—a supplementary sum of money might be raised so as to offer a fair remuneration to competitors for the considerable labour which the construction of these models must necessarily involve."

The Board, Major Rowe announced, had awarded the respective prizes as follows:—1, *Barrel-pier Bridge*, Sapper Frank Walters; 2, *Trussed-spar Bridge*, Sapper David Tate; 3, *Three-gun Battery*, Sergeant Hill. Notwithstanding that, as previously mentioned, an extension of time for the 1882 competition had been authorised, only these three models were produced, and, consequently, the balance of the grant was returned to the Treasury. The report of the shooting operations was favourable. The best teams of the Colony had been competed with. With a desire to foster this efficiency, Major Rowe again offered a trophy for the ensuing year, and was supported by his brother officers and Captain Strong, commanding Cadets. It was suggested at this meeting that, perhaps, the ladies might like to give a prize also. Some little amusement was caused by a proposition to the effect that the ladies' trophy should be competed for by only the single men of the corps, and that the prize should be a wedding ring and keeper, the successful competitor to marry within a certain time or to forfeit it. Major Rowe, amidst laughter, said these restrictions appeared rather severe, that perhaps they had better let the committee decide the conditions. Corporal Parry now became treasurer, and Corporal Nixon assistant secretary.

Apropos of the technical lectures given hitherto from time to time by the Engineer officers to their corps, the following very complimentary sub-leader bearing upon the subject appeared in the *Sydney Echo* of the 24th January:—"On observing the reports of what appear to be the interesting and well-constructed lectures on technical subjects delivered from time to time by the officers of the Engineers, the query naturally suggests itself, Why this branch of instruction is confined to the Sappers alone? It is true that the Engineers are presumed to be, *par excellence*, the scientific arm of the force; but the Artillery is so in almost an equal degree, and there are many topics upon which information in this shape might be advantageously imparted to the Infantry. The Gunners, for instance, might be instructed in the science of what are known as 'hasty defences'; in the principles on which the penetrative power of projectiles depend; and in the laws which govern the construction of guns, carriages, and platforms, &c. The Rifles might with advantage be informed somewhat of the simpler methods of field fortification, reconnaissance, and so forth. Certainly, the officers of the Engineers (Major Rowe and Lieutenants Parrott and Stuart-Cansdell) deserve much credit for the excellent example they have set, for it is scarcely necessary to state they receive no fee or remuneration for these lectures, the preparation of which must be a tax more or less severe upon such leisure as they can spare from their private professional avocations. It does not follow that a scientific lecture need necessarily be of the 'dry-as-dust' species; it may, on the

contrary, be made both instructive and amusing, and we shall be glad to hear of other of our local officers following in the footsteps of the gentlemen named."

Corporal William H. Nixon was promoted to the rank of sergeant on the 5th March. At the next encampment, during six days at Easter, held for the first time at Windsor on ground known as Gosper's Paddock, beyond a few minor fieldworks scarcely any engineering duties were accomplished, the corps having again, for want of adequate consideration in the matter of the transport of requisite stores, relapsed into a mere infantry life, marching and performing evolutions at drill, according to the press criticisms, as well as any corps upon the ground. On the 14th April, in a rifle match with a team of six men from H.M.S. Nelson, the Engineers won by 56 points, and on the 12th May another team of the corps, commanded by Lieutenant Parrott, again visited Bathurst, and was defeated by the country corps by 95 points. On the 27th July Sergeant W. H. Nixon was appointed quartermaster-sergeant, and Corporal J. H. Parry sergeant. On the 19th September the fifteenth quarterly lecture given by the officers was delivered by Lieutenant Stuart-Cansdell, the subject being "Fieldworks." The lecturer pointed out that it was the particular duty of every member to thoroughly understand the principles of fortification, and also the trace and construction of fieldworks in general. He stated that in the event of their services being required in the field, the construction of fieldworks and repairs of permanent harbour and coastal batteries would undoubtedly be among their duties. The lecturer dwelt at considerable length upon the trace, profile and defilade of redoubts, redans or flèches, lunettes, and bastions and the several adjuncts to the same, such as traverses and parados; and also the requisite angles, faces and flanks. He next referred to the description and relative position of advanced and collateral works, and concluded with remarks upon the general drainage. The lecture was illustrated by numerous well-defined diagrams, and Lieutenant Parrott said that he considered Lieutenant Stuart-Cansdell was entitled to a hearty vote of thanks for the clear and practical manner in which he had treated the subject. At the conclusion of the annual inspection of the corps by the Commandant this year, Major Rowe, on behalf of the company, for the second time presented Staff-Sergeant James Masters with a purse of sovereigns in recognition of his valuable services as instructor. In doing so Major Rowe complimented the recipient upon the excellent manner in which he had at all times performed his duties, and said he was glad to see Staff-Sergeant Masters's efforts appreciated. On the 17th October Corporal Alexander Sellar was promoted to a sergeancy. Buff belts in lieu of brown were issued to the force generally on the 19th October. Four days prior to this Sergeant

William Hill, who had had a long and useful career in the corps, was obliged to retire from service on account of a severe illness, to which he shortly afterwards succumbed. On the 3rd November, in a shooting match *versus* the Partially-paid Artillery, the Engineers won by 41 points. The officers of the corps had up to this period been assisted by officers of the Naval and Military forces and others in providing inducements in the way of prizes for encouraging rifle practice, but a few officers of kindred corps, recognising that the lectures were now open to, and for the good of, the whole Service, and also that the models were for general instruction, kindly offered prizes to stimulate competition amongst the sappers, Lieutenant W. P. Mulholland (afterwards Captain), of the 2nd Regiment of Infantry, leading off in this respect and receiving a special vote of thanks. The quarterly lecture was delivered by Major Rowe on the 15th December, the subject being "Casemates." The lecturer first thanked the members for the excellent models which had been sent in for competition that evening, a fact which, he thought, evinced on their part some considerable energy and capability, and a general desire to promote the welfare not only of the corps, but of the whole military force of the Colony. He then stated that improvements in modern warfare were increasing in a greater ratio year by year, and that a greater necessity than ever now existed for a corps of thoroughly instructed Military Engineers, but that the requisite practical instruction could not be accomplished without a more liberal outlay on the part of the Government of the Colony. Major Rowe then referred at some considerable length to the construction of casemates, especially the Grusen type, adopted by all European nations, the use of mild steel instead of iron having greatly reduced the cost. The class firing this year was most satisfactory, fifteen out of nineteen men going through a musketry course and obtaining the marksman's badge. Sergeant Sellar proved himself to be the best shot. The corps was fairly represented at the Association matches, there being seven winners out of eleven competitors. Prizes for modelling were given as follows:—1, *Wire-rope Suspension Bridge*, Sapper David Tate; 2, *Log Hut*, Sapper Walters; 3, *Round-spar Signal Observatory*, Sapper Walters; 4, *Square-timber Signal Observatory*, Sergeant Sellar; 5, *Lattice-girder Spar Bridge*, Sapper Jesse Poole. There were also two special prizes, one the gift of Lieutenant Mulholland, 2nd Regiment of Infantry, awarded Sapper Walters for *Stockade of Vertical Timbers*, the other given by Major Rowe to Sapper Jesse Poole for *Single-spar Spiral Signal Observatory*. The principal prizes for shooting were:—1, presented by Major Rowe, a silver watch, to Sapper Henry Hennessy; 2, Captain Strong's prize, a silver cup, to Sapper Christopher Mulhall; and 3 and 4, Lieutenants Parrott's and Stuart-Cansdell's prizes, to Corporal J. Tait

and Sapper D. Tate respectively. The proceedings of the year closed with another rifle match with the Bathurst Corps at Paddington, on the 26th December, the country company winning by 19 points.

CHAPTER XIV.

At the commencement of the year 1884 an increase of ten sappers to the corps was authorised. Lieutenant Stuart-Cansdell, when presiding at the eleventh annual meeting of the Rifle Club on the 22nd January, announced that the officers of the corps, willing to stimulate the production of good models, would, hence forth, annually, as promised, offer supplementary prizes. He then distributed those won during the previous year—Sapper Frank Walters, the recipient of three out of seven, being accorded loud applause. Captain Strong, by request, kindly handed over Major Rowe's and his own shooting trophies, and, addressing the men, referred to the keen interest he had always taken in the welfare of the Engineers, to whom he considered great praise was due for their considerable progress in their particular military professional duties as well as in shooting. Sergeant Parry was reappointed treasurer, and Sapper David Tate succeeded Quartermaster-Sergeant Nixon as assistant secretary. The total amount of prize-money, inclusive of the Government grant, handed over to competitors in modelling and shooting for 1883 was £54. The Partially-paid Artillery won by 6 points a rifle match with the corps on the 1st of March, and on the 18th of the same month Lieutenant Parrott gave a lecture on "Plevna Redoubts." Nearly three years had elapsed since the authorities promised to distribute badges to members who had distinguished themselves by particular merit or proficiency in engineering modelling. One of the several designs submitted long previously by the officers of the Engineers was at last selected and approved. The design obtains to this day, and is that of a gabion, with the date of issue surrounded by a wreath of waratah, and surmounted by a crown worked in lace on cloth, and worn upon the sleeve like a musketry badge, and is much coveted by members of the corps. A few days prior to the encampment at Easter Major Rowe was granted twelve months' leave of absence, to enable him to visit England and the Continent, and Lieutenant Parrott, having now qualified himself for the post of Captain—long since vacant—was gazetted on the 8th of April, and took command of the corps. The camp was held, for the second time, at Windsor Farm, the Engineers mustering to the number of fifty-six of all ranks out of a possible

William Hill, who had had a long and useful career in the corps, was obliged to retire from service on account of a severe illness, to which he shortly afterwards succumbed. On the 3rd November, in a shooting match *versus* the Partially-paid Artillery, the Engineers won by 41 points. The officers of the corps had up to this period been assisted by officers of the Naval and Military forces and others in providing inducements in the way of prizes for encouraging rifle practice, but a few officers of kindred corps, recognising that the lectures were now open to, and for the good of, the whole Service, and also that the models were for general instruction, kindly offered prizes to stimulate competition amongst the sappers, Lieutenant W. P. Mulholland (afterwards Captain), of the 2nd Regiment of Infantry, leading off in this respect and receiving a special vote of thanks. The quarterly lecture was delivered by Major Rowe on the 15th December, the subject being "Casemates." The lecturer first thanked the members for the excellent models which had been sent in for competition that evening, a fact which, he thought, evinced on their part some considerable energy and capability, and a general desire to promote the welfare not only of the corps, but of the whole military force of the Colony. He then stated that improvements in modern warfare were increasing in a greater ratio year by year, and that a greater necessity than ever now existed for a corps of thoroughly instructed Military Engineers, but that the requisite practical instruction could not be accomplished without a more liberal outlay on the part of the Government of the Colony. Major Rowe then referred at some considerable length to the construction of casemates, especially the Grusen type, adopted by all European nations, the use of mild steel instead of iron having greatly reduced the cost. The class firing this year was most satisfactory, fifteen out of nineteen men going through a musketry course and obtaining the marksman's badge. Sergeant Sellar proved himself to be the best shot. The corps was fairly represented at the Association matches, there being seven winners out of eleven competitors. Prizes for modelling were given as follows:—1, *Wire-rope Suspension Bridge*, Sapper David Tate; 2, *Log Hut*, Sapper Walters; 3, *Round-spar Signal Observatory*, Sapper Walters; 4, *Square-timber Signal Observatory*, Sergeant Sellar; 5, *Lattice-girder Spar Bridge*, Sapper Jesse Poole. There were also two special prizes, one the gift of Lieutenant Mulholland, 2nd Regiment of Infantry, awarded Sapper Walters for *Stockade of Vertical Timbers*, the other given by Major Rowe to Sapper Jesse Poole for *Single-spar Spiral Signal Observatory*. The principal prizes for shooting were:—1, presented by Major Rowe, a silver watch, to Sapper Henry Henness; 2, Captain Strong's prize, a silver cup, to Sapper Christopher Mulhall; and 3 and 4, Lieutenants Parrott's and Stuart-Cansdell's prizes, to Corporal J. Tait

and Sapper D. Tate respectively. The proceedings of the year closed with another rifle match with the Bathurst Corps at Paddington, on the 26th December, the country company winning by 19 points.

CHAPTER XIV.

At the commencement of the year 1884 an increase of ten sappers to the corps was authorised. Lieutenant Stuart-Cansdell, when presiding at the eleventh annual meeting of the Rifle Club on the 22nd January, announced that the officers of the corps, willing to stimulate the production of good models, would, hence forth, annually, as promised, offer supplementary prizes. He then distributed those won during the previous year—Sapper Frank Walters, the recipient of three out of seven, being accorded loud applause. Captain Strong, by request, kindly handed over Major Rowe's and his own shooting trophies, and, addressing the men, referred to the keen interest he had always taken in the welfare of the Engineers, to whom he considered great praise was due for their considerable progress in their particular military professional duties as well as in shooting. Sergeant Parry was reappointed treasurer, and Sapper David Tate succeeded Quartermaster-Sergeant Nixon as assistant secretary. The total amount of prize-money, inclusive of the Government grant, handed over to competitors in modelling and shooting for 1883 was £54. The Partially-paid Artillery won by 6 points a rifle match with the corps on the 1st of March, and on the 18th of the same month Lieutenant Parrott gave a lecture on "Plevna Redoubts." Nearly three years had elapsed since the authorities promised to distribute badges to members who had distinguished themselves by particular merit or proficiency in engineering modelling. One of the several designs submitted long previously by the officers of the Engineers was at last selected and approved. The design obtains to this day, and is that of a gabion, with the date of issue surrounded by a wreath of waratah, and surmounted by a crown worked in lace on cloth, and worn upon the sleeve like a musketry badge, and is much coveted by members of the corps. A few days prior to the encampment at Easter Major Rowe was granted twelve months' leave of absence, to enable him to visit England and the Continent, and Lieutenant Parrott, having now qualified himself for the post of Captain—long since vacant—was gazetted on the 8th of April, and took command of the corps. The camp was held, for the second time, at Windsor Farm, the Engineers mustering to the number of fifty-six of all ranks out of a possible

sixty. Immediately after the troops had shaken themselves down to life under canvas, the 1st Regiment of Infantry took up ground on the slope leading away in front of the left flank of the camp, and was divided into parties for shelter-trench drill, a detachment of two non-commissioned officers and ten sappers of the Engineers being told off to lay out entrenching tools, and instruct the Infantry in the drill. As usual during the first day of training, the Engineers themselves were busily engaged in attending to the multifarious duties incidental to the comfort of the troops. On the following day, during the forenoon, bridging stores were conveyed to the western bank of South Creek, which skirted the rear flank of the camping-ground. At a distance of a few hundred yards from the railway bridge over this stream, and near the pumping station, a site was selected for crossing. The stores comprised 35 casks, with baulks and chesses of timber enough to form a floating bridge, 95 feet long, of seven spans, or five piers of seven casks each. In the afternoon the construction was commenced, all the piers, with the exception of one, being completed, and the rafts were boomed out, and anchored across the stream. A small detachment of the corps, under Sergeant Sellar, took part in a sham attack upon the camp very early on Sunday morning. On Easter Monday morning the greater portion of the corps resumed the construction of the barrel-pier bridge. It was found that many of the casks had leaked on the previous day, so much so that part of the bridge had sunk almost to the level of the water. This defect in the casks had been noticed before, and on examination sundry small holes were found under the hoops, evidently pierced by worms or gimlets, thereby lessening the utility of the bridge, as, of course, it was impossible to obtain anything like the safe allowance of nine-tenths of the actual buoyancy; but, as the bridge was principally made for instructional purposes, the men engaged upon the work were none the worse for having this practical difficulty to overcome. The perfect condition of the barrels is always of the first importance, and as some of the casks filled in half-an-hour, and pumping operations had to be continued, it was a heavy handicap for the men to have to keep the bridge afloat. Service casks required by the Royal Engineers for bridging were not available, and those used upon this occasion were obtained on requisition from the Royal Naval Depot, Sydney, where they had been used for holding rum, a number of them bearing evidence of having come from 'tween-decks of the distinguished ironclad "Inflexible." Some Jack Tars had evidently tapped the rum. On Tuesday the bridge was finished, and by constantly pumping out the casks it was kept sufficiently buoyant to answer its purpose satisfactorily. This state of affairs, however, necessitated much extra labour, and Sapper G. H. Clarke, stationed at the bridge every day, earned the nickname from his

comrades of "Pump Major." When completed, the structure was successfully put to a practical test—some of the infantry regiments marching over it during their evolutions in attack and defence of the ground occupied in mimic warfare. On the eve of his departure for Europe Major Rowe, to bid farewell, paid an informal visit to the camp, when he was presented with a very handsome field-glass, suitably engraved, by his officers, non-commissioned officers and men. From an engineering point of view this was, undoubtedly, up to this time the most successful encampment ever held. Corporal Thomas Herbert Ayton was promoted to the rank of sergeant on the 13th June. The usual quarterly lecture was delivered on the 24th June by Lieutenant Stuart-Cansdell, the subject being "Hasty Demolitions by means of Explosives." The lecturer first pointed out the necessity of becoming familiar with the duty of each part in any structure in order to attack the same, with a view of disabling or destroying it hastily and effectively, and briefly referred to demolitions classified as moderate and violent. The lecturer next explained the nature and use of various explosive compounds and combustibles which are employed in the field, such as gunpowder, gun-cotton, nitro-glycerine, dynamite, &c., and the methods of applying the requisite charges for the hasty demolition of such obstructions and works as trees, walls, buildings, stockades, bridges and railways, and also light and heavy ordnance, and he concluded by describing some excellent improvised torpedoes, made up from the stores usually carried in an ordinary engineer field equipment. This lecture was illustrated principally by reference to models. On the 13th September, in a rifle match with the Partially-paid Artillery, the corps lost by 30 points. The annual inspection by the Commandant on the 20th September was attended by a large muster of the corps. Colonel Richardson was received with the customary salute, and after the ordinary minute examination of arms, accoutrements, and clothing, and the general preliminary drill upon such occasions, detachments were told off for barrel-pier and trestle-frame bridging. The Commandant expressed himself to the commanding officer as being much pleased with the general good turnout. Captain Parrott delivered the quarterly lecture on the 25th September, the subject being "Egypt and the Soudan"—a sequel to a paper read some time previously by the same officer on the Egyptian War of 1882. The lecturer referred at some length to the characteristics and government of the people of the Egyptian territory, from ancient up to the present time. Illustrating his subject by several sketches and maps of Egypt, Captain Parrott stated that it was his intention, if possible, upon some future occasion, to examine in detail the route taken and operations performed by the relief expeditionary force which was then moving up the Nile. A team from the corps paid their fifth

visit to Bathurst on the 10th November, Captain Parrott and Lieutenant Stuart-Cansdell being accompanied by thirteen other members. On this occasion the Bathurst Corps, 3rd Regiment of Infantry, was defeated by 14 points. On the 9th of December the twentieth quarterly lecture was delivered by Lieutenant Stuart-Cansdell, the subject being "Fieldworks." The lecturer prefaced his remarks by stating how necessary it was, on account of constant recruiting in the force, to discuss over and over again the elementary principles of fortification, and that in view of this fact, it was his intention to revise up to date and bring forward from time to time all the papers upon military engineering subjects which he had previously placed before them. The lecture was illustrated in detail by well-defined coloured diagrams. Captain Parrott, in addressing the meeting, said:—"He fully endorsed the remarks made by the lecturer at the earlier part of his discourse with regard to the necessity, on account of constant recruiting in the force, of discussing over and over again the elementary principles of fortification, and he wished particularly to thank Lieutenant Stuart-Cansdell, on behalf of the corps, for the very able and thoroughly practical manner in which he had handled the subject placed before them that evening. He felt pleased at this duty, more especially because they all knew how emphatically Major Rowe had pronounced an opinion that all their efforts in this direction could not be too practical, and Lieutenant Stuart-Cansdell was to be congratulated upon the way in which he had carried out the wishes of his superior officers." With regard to fieldworks, Captain Parrott said he would take the opportunity of mentioning that he had suggested, in a lengthy memorandum to the Commandant, the advisability of carrying out a defensive scheme for the protection of Sydney. The corps could erect, year by year, permanent works on Government reserves between Sydney and Botany, and by this means the time and labour which were expended, as at present, in the continual erecting and dismantling of works at the depôt, might be turned to some good and lasting account. He was glad to say that Colonel Richardson had approved of the idea, and, no doubt, before the new year was far advanced, a movement would be made in this direction. Lieutenant Stuart-Cansdell's lecture on these works was therefore most opportune, and it was with great pleasure he moved a vote of thanks. Lieutenant Stuart-Cansdell, in replying, said:—"That the regulations did not compel him or his brother officers to give lectures. They had, however, unanimously agreed, some five years ago, to undertake the task, and he himself now looked upon this work as a part of his duty. He had tried to make the various subjects palatable and instructive, and was happy to find that his efforts had been appreciated." The modelling prizes for this year were awarded as follows:—1, 2 and 3, *Gyn for hoisting heavy*

Ordnance, Infantry Foot-Bridge and Swiss Pole-driver, Sapper F. Walters; 4, *Iron-tank-pier Floating Bridge*, Sapper W. G. Gumley; 5, *Fascine and Choker*, Sapper D. Tate; 6, *Rotary Target*, produced by Sapper Charles McIntyre, secured a special prize from Captain Parrott. Great interest had been manifested in the various rifle contests among members, and with companies of the metropolitan and country regiments and cadets, and of five matches three were won. In the musketry course of twenty firing, eleven secured the marksman's badge, Sergeant Sellar again proving himself to be the best shot in the orps.

CHAPTER XV.

From the 1st January, 1885, a further increase of fifteen men, inclusive of a subaltern, was made to the establishment of the corps, thus bringing the total strength up to eighty-five. Captain Parrott presided at the twelfth annual meeting of the Rifle Club on the 29th January, and, in referring to the models of the previous year's competition, which he and Lieutenant Stuart-Cansdell had carefully examined, said:—"That it should be remembered that these models were principally required to illustrate valuable instruction in detail to both officers and men of the military forces. With regard to the particular model which had secured first place—a gyn for hoisting heavy ordnance, complete in every detail, and an excellent piece of workmanship—he said it reflected much credit upon Sapper Frank Walters, who, he felt sure, had bestowed many months of careful labour upon its construction." A fresh committee for the conduct of the rifle practices appointed Sergeant Parry as treasurer for the third consecutive time, and Sapper W. G. Gumley as assistant secretary. About this period two prominent medical gentlemen of Sydney, desirous of giving their services especially to the Engineers, applied for the post of honorary assistant surgeon; but the Commandant did not comply with this or any subsequent request of a like nature, as he thought there were sufficient officers upon the staff for duty. The refusal was, nevertheless, unfavourably received, for, as such appointments had previously been constantly made in the case of other regiments and corps, it seemed to many that a military body engaged in such hazardous work as the Engineers was entitled to its own medical officers, and this ground of dissatisfaction was

strengthened by the appointments which were subsequently several times made of honorary surgeons to other arms of the Service, which did not seem to have so good a claim to such consideration.

Owing to the threatening complications which had now sprung up amongst the Great Powers, and which bade fair to plunge the British Empire into a bloody international struggle, the end of which could not be foretold or foreseen, the Honourable William Bede Dalley, the Acting Premier, and subsequently a member of Her Majesty's Privy Council, offered, on behalf of New South Wales, a Contingent for service in the Soudan—an offer which was accepted by the Imperial authorities in the spirit in which it was tendered—and the neighbouring Colonies at once echoed the sentiment. The dominant tone which has always pervaded the Continent of Australia is sufficient to show that its sturdy inhabitants would not require to be reluctantly dragged forward when once the hostile clarion had been sounded. As Britons, and the sons of Britons, they would rise directed by one mighty impulse, cheerful and ready for duty, however much they might regret, as every right-minded man must, the occurrence of war itself. So Australia vied with Canada and India in its loyalty to the Empire, and on 15th February volunteers were called for for service in Africa, and enrolment proceeded forthwith. On the 1st March the following members of the Engineers, among others representing the different arms of the naval and military forces, having enlisted, were struck off the roll of the corps:—Captain Parrott, Sappers Frank Walters, John H. Smith, William Herlihy, William Lewis, William Simmonds, Peter M'Kenzie, William Wright, Richard Carfoot, and Bugler John A. Berkley. One-half of this detachment had seen five years' service with their corps. So taken up were the military staff officials with the raising, equipping, and despatching of a new force for service abroad, that the home one seemed for a time to have sunk quite into oblivion. Recruiting had been completely stopped, and attention to its requirements ignored. The School of Military Engineering was for a while turned into a kind of general office and dépôt for the Contingent, which seemed the only one thing needful. Captain Parrott, assisted by Staff-Sergeant Masters, acting under instructions from the authorities, selected the necessary implements, instruments, and appliances likely to be required by the troops of the Contingent while in the Soudan, for which place they departed by the chartered steamships *Australasian* and *Iberia*, on the 3rd March, amidst great enthusiasm. A few evenings prior to their leaving, the Engineers entertained at a banquet those members of their corps who had joined the Contingent nominally as infantry, but really as artificers and signallers. This affair was held at the Oddfellows' Hall, Woollahra. Lieutenant Stuart-



Cansdell occupied the chair, and Staff-Sergeant Instructor Masters the vice-chair. After the usual loyal toasts, the health and success of the guests were proposed and honoured. Captain Parrott, who had been appointed Engineer Officer upon the Staff, responded on behalf of the detachment, and a most enjoyable evening was spent in song and recitation, and Lieutenant Stuart-Cansdell presented Captain Parrott with a field-glass and pocket compass, and the rank and file with necessaries for their kits. On the 13th March Corporal Edward W. Turner was promoted to a sergeancy.

Lieutenant Stuart-Cansdell now commanded the Engineers, and on the 17th March gave the general quarterly lecture, the subject being "Hasty Entrenchments." The lecturer, having urged that the increased power of improved rifled arms of the present day rendered it more than ever necessary that cover should be provided for troops in action, that natural cover would, of course, be turned to account in the most advantageous manner, but that in many cases artificial cover should have to be used, pointed out that the hasty entrenchments by which the natural defensive features of a position would have to be supplemented, were threefold, viz. :—1, Cover for skirmishers, comprising shelter and rifle-pits; 2. Cover for the shooting line, supports and reserves, such as shelter-trenches, breastworks and epaulments; and 3, Cover for artillery, consisting of gun-pits and epaulments. Remarking that men skirmishing or extended in open order in front of a position which they have to defend, should be able to make cover for themselves and that in most instances the defenders would only have to take advantage of any natural cover, which they should improve if time admits; the lecturer explained in detail, by means of models and drawings, hasty defences constructed of various materials, and their adjuncts such as charger and limber-pits; also the kind of head cover required. The military authorities were now impressed with the absolute necessity of, as far as possible, making some portion of the partially-paid troops, at least, intimately acquainted with all the fortifications of the Harbour and their immediate surroundings. It was with this view that the Easter manoeuvres were this year held at Middle and South Heads. The Engineers, divided for the first time, and numerically weak after a loss of one-sixth of their possible actual strength drafted for foreign service, appeared in the form of two minor detachments. Lieutenant Stuart-Cansdell, their only officer, went with the General Staff to headquarters at Middle Head, having with him Staff-Sergeant Masters and 27 other non-commissioned officers and men, while Sergeants John H. Parry and T.H. Ayton, with 18 sappers, were told off to South Head. Additional telephonic communication having been established direct for the occasion between Middle and South Heads batteries, there was, therefore, a general control by the officer commanding the corps. The Middle Head detachment

went out with the 4th Infantry Regiment to Hunter's Beach on Saturday, when they were employed in shelter-trench work, and very early on Sunday morning, on an alarm being given, defended Cobbler's Beach. On the following day they again proceeded to Hunter's Beach, making gabions and fascines, and in a sham fight, while returning to camp, the Engineers supported the Infantry in a line of operations extending from Shell Cove to Balmoral, holding also the Spit-road. On Easter Monday afternoon a supposed entrenched position at Spit Head was marked out with brushwood in zareba fashion, under the direction of Lieutenant Stuart-Cansdell. This site, on a very rocky eminence 180 feet above sea level, commanding the Port Jackson Heads and distant three-quarters of a mile from Middle Head Battery, was utilized by the Field Artillery and Infantry when the grand sham attack was made by the Naval Squadron later on. During the last night, in a surprise on the camp by the Naval Brigade, the Engineers were detailed to proceed in a steam launch from Cobbler's Beach to patrol the waters of Middle Harbour in order to prevent the landing of boat parties. Upon the return of the Engineers after the cessation of the mimic hostilities, it was ascertained that disembarkation could not be proceeded with because the officer in charge was unable to give the pass-word, it having been changed during the conflict. Thus they were in a very unenviable position, awaiting the chance of getting back to their quarters for more than two hours in the early morn, when every man in camp was asleep excepting the wary and persistent sentries. The Engineer section at South Head commenced a line of shelter-trenches, which were completed by Monday morning, and afterwards threw up hasty earthworks immediately above the beach of Lady's Bay, a place which would doubtless prove irresistably attractive to boat parties despatched from the war ships of any hostile power which might succeed in effecting an entrance through the Heads. In the sham fight on Easter Monday these trenches were occupied by the Engineers as well as by the Infantry.

In consequence of the aggressive spirit manifested at this period towards the Mother Country by Russia, intensified by continual cable interruption with Europe, and the considerable reduction in the number of troops available for service in the Colony, caused partly by the draft for the Contingent then in the Soudan, and partly by the cessation of recruiting for some time, a war scare ensued, so that orders were received on the 14th April to immediately recruit each company to double the strength of a peace footing, and the Engineer Corps, within five days of this notice, was a fine company of 120 strong.

Lieutenant Stuart-Cansdell, commanding Engineers, received a letter dated Suakim, 9th May, from Private F. Walters,

of the Contingent, who wrote :—"No doubt, sir, you will be pleased to hear a little of our welfare and doings here. After a good voyage of twenty-six days, during which our principal occupation was with bath-brick and pipeclay, we arrived on Sunday, the 29th March, and immediately went to the front. With our valises and all our harness on, we had to trudge about two miles through heavy sand over our boot tops, and in the blazing sun. General Graham addressed us in flattering terms, and the English soldiers cheered us right heartily. Tents and tea were ready, and proved very acceptable. During the next two days stores and kaki clothing were served out, and we had to stain our helmets and belts with coffee so as to make them look as sand-like in appearance as possible, in order that we might not be so easily seen by the enemy. On the afternoon of the 1st April we struck tents, and lay out on the sand until about 2.30, when "rouse" was sounded ; and after obtaining a little coffee and some biscuits, we marched about a mile and a-half, and were formed into a large square extending a quarter of a mile on each side, and in which were about 8,500 fighting men, all the camels, mules and transport being in the centre. At about 8 o'clock in the evening we came upon the battlefield of the 22nd March, where some 1,200 or 1,400 men had been slain. We had to walk over the dead bodies lying in all directions. Some had been only partly buried, legs and arms showing up through the ground everywhere, the stench being intolerable. Arriving about two miles off Tamai, we halted, and made a zareba of mimosa, or thorn bushes, and then taking possession of the hills around, on which we built redoubts, pickets were told off, upon whom there was a good deal of firing during the night. At dawn we formed square again, and marched onwards, leaving everything except the fighting men behind. As we approached Tamai there was a deal of firing, but the enemy retired to the mountains. There were three of our Contingent slightly wounded, and I saw one of the Imperial men carried away, apparently shot in the head. The wells were found to be dried up, and so, as we could not draw the enemy out, we retired, burning all the huts, &c. You may ask how did we stand the fire ? I say that there was less excitement and fuss while under fire than there is on Moore Park on Her Majesty's birthday. Reaching the place near where Baker Pasha's force was so badly cut up, we halted for the night, and made a zareba. In the morning we returned to Suakim, arriving at about 4 o'clock in the afternoon of Saturday, the 4th April. Several of our men had fallen out—Major Jeykell being knocked up, and Captain Parrott, who was in charge of the transport, being attacked by sunstroke, had to be taken to the hospital. Our men suffered from thirst very much. There were signal stations and signal parties every mile or so, and they did grand service. We

were not called upon to do any signalling, but a party of eight men had practised on board ship, under the direction of Captain Parrott. About 4 o'clock on Monday morning, the 6th April, we started for Handoub, marching about six miles, and, halting for the night, made another zareba, in which we stayed the next day and night, when there was a good deal of firing at us, which we returned. Handoub was reached after a march of seven miles. The enemy had occupied this place on the hills but recently, and our troops, making a zareba, pitched tents, and settled down for the night. We had sixty in a tent, but many had to be on picket or guard duties nearly every day, and we had, moreover, to sleep with one eye open, as the Arabs are in the habit of getting into the tents on their hands and knees, and cutting the soldiers' throats. After a stay here of two days we journeyed about 14 miles over the mountains to Hasheen, whither troops had gone from other places. The idea was to try and catch the enemy, but they had apparently left in a hurry. We were very thirsty on this march, it being very hot, so hot that one could not hold the stones picked up from the ground in one's hands. After staying at Hasheen about a week we advanced on Otao, where there was plenty of water. When upon the mountains the Arabs fired at us every night. Accompanied by the friendly Arabs we went out in the daytime, and a camel corps having been formed, they went out in advance of the main body as far as Sinkat, but could not find the enemy. It is quite evident that they either do not want to fight, or else they wish to catch us by surprise or in small parties. They have found out that British soldiers are very different to Egyptian soldiers, of which Hicks Pasha's or Baker Pasha's forces were composed. On the 27th April we were asked if we would volunteer for service in Afghanistan, and between 100 and 150 agreed to do so. Our officers said it was not likely we should be required in the Soudan much longer. Having retired back to Suakim, now we are manning the redoubts at night and practising camel-riding in the daytime, and it is an amusing show. Sometimes the camel gets up before both men are on its back. Then it has to go down again. Then, perhaps, one or two men will be seen hanging with their feet in the stirrup and heads downwards. Sometimes the saddle slips off sideways, and sometimes it comes off behind. You may imagine two men with their rifles slung around them on a large saddle sliding off behind a camel about nine feet high. It is getting hotter every day, but colder at nights, especially towards morning. The water supply is generally very bad on account of being carried about on mules and camels, and the doctor says if we drink it we are liable to typhoid fever, and if we drink the brackish water we are liable to dysentery, so the water has to be condensed, but there are not many of us sick, and we stand our troubles as well as, if not better,

than the Imperial troops. However, the sooner we get away from this place the better, as it is very uncomfortable, with sand in everything and sand for our beds, while we are in a state of perpetual perspiration resembling a Turkish bath. John H. Smith, late of the Engineers, is one of our pioneers. One of our men has bought a white donkey which he is going to bring home to head the Contingent through the streets. I hope the corps is progressing, and that you will not object to take us back upon our return, as I dare say we shall have learned something new. I expect you had more work than usual at the late camp, as you were the sole officer of the Engineers. We old comrades all wish to be remembered to you, Staff-Sergeant Masters and the members of the corps." Lieutenant Stuart-Cansdell handed this letter round, its interesting contents being eagerly perused and commented upon.

Major Rowe, returning from England on the 16th May, reassumed command of the Engineers, and three days later Mr. Henry Paul Ramsay Copeland, a field assistant-engineer in the Harbours and Rivers Department, was gazetted as a Lieutenant of the corps. The usual Queen's Birthday Review was postponed until the return from the Soudan of the troops, comprising 800 officers and men, but regiments and corps held parades separately on their own private drill grounds, fifty Engineers, commanded by Lieutenant Stuart-Cansdell, attending at the Victorian Barracks. The usual quarterly lecture was delivered by Major Rowe on 16th June, when eighty members were present. The subject selected, "Improvements in rifled ordnance, machine guns and small arms," was compiled principally from special notes gathered by the lecturer whilst visiting Woolwich and Enfield during a recent tour round the world, and was rendered all the more interesting by the description of various reviews and other military meetings at Aldershot, Wimbledon, and other places at which it was Major Rowe's good fortune to be present. The lecturer concluded his remarks by saying:—"That ever since its formation some fifteen years previously the Engineer Corps, composed entirely of professional men and skilled mechanics, had pulled together admirably, and he trusted this *esprit-de-corps* would long be maintained." He also said that he hoped there would be a large muster on the occasion of the reception of the Soudan Contingent, more especially to welcome back Captain Parrott and other old members of the corps. On the 18th June a notice appeared in the Government *Gazette* of Captain Thomas Samuel Parrott's promotion to the rank of Brevet-Major for services rendered with the Contingent in the Soudan. The troops from Egypt disembarked on the 28th June, and although an exceedingly wet day the various corps, as well as the citizens, turned out in thousands to welcome their return. The Contingent was now disbanded, and on the 6th July its late members who had previously served

with the Engineers rejoined their old comrades. A month later the corps was armed with Martini-Henry rifles. The quarterly lecture given by Major Parrott on the 15th September was upon "The Military Operations in the Eastern Soudan." The lecturer, who introduced his subject by a brief review of the circumstances which led to the then complications, gave an interesting account of the operations near Suakim, entering into the details of the Arab method of attack by surprise, especially at night, which necessitated a modification of the rules laid down in the drill books, and the adoption of a plan of defence that would for a moment, at least, hold back the hordes who were impelled by a wild fanaticism that caused its devotees to rush upon the British bayonets with eagerness and even delight. The position of the British forces on the mainland outside Suakim before the arrival of the Australian Contingent, was next described, and Major Parrott afterwards explained the use and construction of a zareba, and described the fight at McNeill's zareba, which he introduced into his subject to illustrate its peculiarities. Referring to the methods adopted in organising and equipping transport corps, he spoke of the extraordinary strain that was imposed on this branch of the service on the march to Tamai and back. A number of diagrams were shown in conjunction with this lecture which was regarded as only an introductory one to a series dealing with works in use during this campaign. Major-General Richardson, C.B., being on leave of absence in India, the annual inspection was made by the Acting Commandant, Colonel C. F. Roberts, C.M.G., on the 31st October, on the parade ground in front of the School of Military Engineering. Colonel Roberts, who was accompanied by Major Henry Douglas Mackenzie, Assistant Adjutant-General, Major Cooper Penrose, Royal Engineers (just then appointed to the Staff as Submarine Mining Instructor), and Captain William Andrew Cuthell, Chief Instructor of Musketry, was received with presented arms and bugle salute. Among the spectators were many well-known officers of the Partially-paid and Volunteer Reserve Corps. There was a capital muster of the company, composed entirely of expert artisans of very good physique, who presented upon this occasion a particularly smart appearance; 111 members of all ranks being present out of a total roll-strength of 119, including Major Rowe, Major Parrott and Lieutenants Stuart-Cansdell and Copeland. After a minute examination of clothing, arms and accoutrements the company was put through the manual and firing exercises by Lieutenant Stuart-Cansdell, the men being very steady and acting with precision. Detachments were afterwards told off under their immediate officers for various engineering duties, viz., extending for shelter-trench, signalling, construction of iron gabions and lashing of spars for trestle-frame bridging. Two squads, in charge of

Sergeant Parry and Corporal C. A. Cowlands respectively, were also engaged in the forming up of barrel-piers for floating bridges. Works having been dismantled, and stores replaced, Major Rowe informed the company that the Acting Commandant was highly pleased with his inspection. Referring to an order which had been read that day on parade, announcing the resignation of the Instructor, Staff-Sergeant Masters, Major Rowe said he was sure all regretted, but fully expected, this event, as there was so little pecuniary inducement offered to warrant any good man holding such an appointment. Major Rowe spoke in high terms of the efficient, honourable, and praiseworthy manner in which Staff-Sergeant Masters had performed his duties for many years past, and called upon those present for three hearty cheers, which were lustily given. Staff-Sergeant Masters thanked the company for their expressions of approval, and stated that he had been connected with many Corps of Engineers, both in the regular and auxiliary forces, for a period of over 20 years, and naturally felt somewhat reluctant to leave the Service. On this account he had decided to join the ranks as a sapper rather than sever his connection with the corps with which he had served about seven years, and to which he had become so very much attached. A month subsequently, however, he was reappointed instructor for the third time, with the rank of sergeant-major, and with extra pay and allowances. In acknowledgment of a letter of condolence from the officers of the Engineer Corps sent to the widow of Major-General Sir Peter Scratchley, R.E., K.C.M.G., formerly military adviser to the several Australian Governments, and whose death occurred while occupying the post of High Commissioner in New Guinea, Major Rowe received a communication from G. Seymour Fort, Esquire, Private Secretary, written from "Critchill," St. Kilda, Victoria, and dated the 26th December, in which he said :—"I am desired by Lady Scratchley to acknowledge the receipt of your letter expressing the sympathy and condolence felt towards her in her bereavement by the officers of the Engineer Corps of New South Wales : I have the honour to request that you will convey to the officers of the corps Lady Scratchley's deep sense of gratitude, both for the token of respect and regard paid by them to the memory of her late lamented husband, as well as for the sympathy and condolence expressed towards herself in her great sorrow and bereavement." On the 15th December the twenty-fourth quarterly lecture was delivered by Lieutenant Stuart-Cansdell, on "Military Bridging," in the presence of Major Rowe (commanding) Major Parrott, eighty non-commissioned officers and men, together with a few visitors. Thirteen models were produced this year, and the awards were as follows :—1, *Bridge Head*, Corporal Cowlands ; 2, *Redoubt and Zareba*, Sapper Walters ; 3 and 4, *Large and Small Section of Fieldworks*, Sapper T. H. Phil-

pott; 5, *Circular Sandbag Redoubt*, Sapper Walters; 6, *Hydraulic Ram*, Sapper James Johnstone; 7, *Sentry Box*, Sapper Walters; 8, *Gabions, Fascine, and Choker*, Sapper Thomas H. Philpott; 9 and 10, *Barrel-pier* and *Suspension Bridges*, Sapper D. Tate. Sapper Frederick Backwell received special mention for *Sheet-iron Gabions*. In the usual course of musketry thirteen secured the marksman's badge—Sapper J. M. O'Connor being the best shot in the corps. The various trophies for shooting awarded by the officers were won by—1, Corporal Quantock; 2, Sapper D. Tate; 3, Sapper Gumley; and 4, Sapper Mulhall. In special half-yearly competitions Corporal Quantock, the only scratch shot succeeded in obtaining both prizes, thus being the recipient of three altogether. In rifle shooting contests with the Torpedo and the Partially-paid Artillery Corps the Engineers won both by 72 and 4 points respectively. Many matches were withdrawn on account of a scarcity of ammunition in the Colony.

CHAPTER XVI.

Major Parrott presided at the thirteenth annual meeting of the Rifle Club on the 21st January, 1886, at which Sapper D. Tate was appointed assistant secretary, and Sergeant Parry, for the fourth consecutive year, undertook the duties of treasurer. A team of the corps proceeded to Bathurst, for the sixth time, on the 26th January, when, in rifle matches with the Bathurst Corps, 3rd Regiment of Infantry, and the Partially-paid Artillery, the Engineers lost the former by 22 points, and won the latter by 9 points. On the 13th February a presentation of medals to those who had served with the Soudan Contingent took place at the Agricultural Society's grounds, Moore Park, Lady Carrington graciously performing the ceremony. Three evenings prior to that event 80 members of the corps assembled at "Mona," Darling Point, the residence of their commanding officer, for the presentation of prizes for modelling and shooting, won during the previous year. At the invitation of Major and Mrs. Rowe, several officers and other friends were present to witness the proceedings, which were of an interesting and somewhat novel character. Among the visitors were Major-General Richardson, C.B., and Mrs. Richardson, Major H. D. and Mrs. Mackenzie, ex-Judge and Mrs. Stuart-Cansdell, and Major Penrose, R.E. The corps, which had formed up on the spacious avenue fronting the residence, awaiting the Commandant, was upon his arrival marched to an adjoining large

picture gallery, tastefully decorated for the occasion with flags, ferns, Chinese lanterns, and exhibits of various military models, which accessories, blending with the scarlet uniforms, presented a gay and pretty scene. Major Rowe expressed his pleasure at seeing Major-General Richardson once more amongst them, and said :—"That this was not a formal meeting, but rather a friendly gathering, at which it was intended to display some very patent results of their labours during the past twelve months. He was glad that the number of models was steadily increasing, and that the majority of them reflected great credit upon the makers. The Board had exercised great care in placing these works in their order of merit, judging them by points under the following sections :—1, adaptability to colonial defence; 2, workmanship; 3, scale; 4, invention; 5, military regulations; and 6, general excellence." The successful competitors were then called to the front, amidst applause, to receive their rewards, which were handed to them by Mrs. Rowe. Major-General Richardson, after some very complimentary remarks upon the professional capabilities of the corps, moved a vote of thanks to Mrs. Rowe for her kindness in distributing the various prizes. After cheers for Her Majesty the Queen, which were lustily given, as were also cheers for General and Mrs. Richardson and Major and Mrs. Rowe, the visitors retired to the drawing-room, the non-commissioned officers and sappers, under Sergeant-Major Masters, remaining in the picture gallery and partaking of refreshments. After passing a very agreeable hour, the corps marched away, extremely pleased with the result of the meeting and the hospitality of their commanding officer. The value of prizes awarded upon this occasion exceeded £40. On the 13th March, in a shooting contest with the Torpedo Corps, the Engineers lost by 56 points. The officers of the corps, taking into consideration that a staff official had now, upon the solicitation of the Government, been appointed from the Royal Engineers, relinquished the self-imposed labour of lecturing on technical subjects, a duty which they had without intermission performed since the latter end of 1879, or for a period of six years, and so Major Penrose, R.E., the officer in question, delivered his first quarterly lecture on the 25th March. The subject was "A hasty field redoubt," such as would be thrown up as a supporting work in a defensive position. The redoubt was designed as a self-contained work, providing flank defence to its own ditches, and the flank faces were planned to take field-guns for the purpose of sweeping the front of the shelter-trenches connecting the work with others. It could be constructed in 18 hours by 20 sappers and 320 infantry in each relief of 6 hours. Bomb-proof accommodation could be added for the garrison of 2 companies of infantry in a very short time, and the work could be considerably strengthened if opportunity allowed. The details

of the construction were minutely explained, and the lecturer illustrated his remarks by reference to diagrams. Major Rowe was gazetted Brevet Lieutenant-Colonel on the 6th April, and on about the same date, through the usual official channel, received a communication to the effect that His Royal Highness, the Field Marshal, Commanding-in-Chief, had brought under the notice of the Right Honourable the Secretary of State for War a report furnished by Major Parrott of a flying geological and hydrological survey of the mountainous country lying west of Suakim on the Berber Caravan Route, together with plans, sections and sketch drawings, in illustration of the topographical aspect of the country from various points, and that His Excellency Lord Carrington was requested to cause the thanks of the War Office to be conveyed to Major Parrott for the excellent work performed in making this technical survey during the limited time of the short but laborious campaign of 1885 in the Eastern Soudan. Major Parrott had, whilst serving with the Australian Contingent as Engineer officer on the Staff, been temporarily attached to the Royal Engineers, whose commanding officer, Colonel (afterwards Major-General Sir) James Bevan Edwards, R.E., had requested him to perform the duty referred to for the use of the Intelligence Department at the Horse Guards.

In order to participate in the Easter manœuvres, the corps marched into camp at the National Park 104 strong out of 112 on the roll, being employed during the first of the six days in the construction of sentry-boxes and the general drainage of the camp; a party of one officer, three non-commissioned officers and twelve sappers being also detailed to superintend the construction of shelter-trenches by the 1st Regiment of Infantry. On the second day the Engineers were busily engaged at the morning parades in throwing up lines of light earthworks as cover for men, horses and field-guns, and in the afternoon in instructing the 2nd Regiment of Infantry in shelter-trench drill. Communication by heliograph was established on the afternoon of Monday, between a party of the Engineers, from the semaphore on the line of railway immediately in rear of the camp, and the Torpedo Corps at Buona Vista, on the Military-road, a distance of 22 miles as the crow flies. Signals were interchanged at intervals during the training. By Monday evening the position was defended from the eastward, or upon the right flank, which was strengthened by a line of fieldworks very skilfully laid out. Starting from the precipitous country, which secured the rear of the camp, the line of entrenchments ran along the crest of the hill, from which it occupied a commanding position, and enabled the whole of the open ground to its front to be swept by the fire of field-guns and rifles. Following the contour of the ground, its left rested on the railroad embankment, which from this point afforded an efficient protection

across the greater part of the proper front of the camp. This was strengthened by gun-pits and epaulments, and a line of rifle-pits placed a few hundred yards in advance of the front line of the ramparts. All the Infantry regiments were daily exercised in their turn in the construction of these works under the direction of Lieutenant-Colonel Rowe. On Tuesday, after the review by His Excellency the Right Honourable Charles Robert Baron Carrington, P.C., G.C.M.G. (afterwards Earl Wendover), a sham attack was made upon the camp by the First and Second Brigades of Infantry, under Colonel Robert Peel Raymond, the mere handful of Engineers, supported by a half-battery of the Permanent Artillery, in charge of Lieutenant Haviland Le Mesurier, the whole under Lieutenant-Colonel Rowe, being posted to defend the position. Along with the First Brigade were a battery of Artillery and a squadron of Lancers. The Second Brigade took post among the timber to the north of the camp with a half-battery of Artillery, These dispositions having been made, and the Sappers extended as a skeleton army of defence, the programme of the day commenced. Suddenly a flash of steel on the ridge betrayed the advance of a scouting party of lancers, who, coming cautiously forward, drew upon themselves the fire of their enemy, causing them to expose their position. Having accomplished this object, they at once fell back to warn the main body. There was then a short interval of suspense, the defenders lying all on the alert for the appearance of the enemy, when, from among the trees on the left, the movement being completely masked by the thick bush,

"Puffs of grey smoke veiling tongues of red flame,
Curling to leeward, appeared on the heights,
Where their batteries were posted."

No sooner had the smoke revealed their situation than a company of marksmen, well under cover, opened a hot rifle fire upon them, but the position of the battery had been well chosen, and they did not slacken their fire. Further to the left, from among the trees on a rocky knoll, the rest of the guns then came into action, hardly a man being seen, so well were they covered by the ground, and maintained a hot fire, which was well responded to by the guns in the entrenchments. For a while the artillery duel raged, when the infantry deployed for the attack and a cloud of skirmishers appeared on the top of the ridge, showing out clear against the sky line. Instantly an outburst of smoke from the advanced line of the defending force warned them that they were in the presence of the main army. Promptly dropping down out of sight they returned the fire, and then advancing steadily, gradually drove back the weaker force. Extending his right Colonel Raymond now threatened an attack on the flank, when Lieutenant-Colonel Rowe, to save being out-flanked, threw back his left under cover of the railway embankment; but all to

no purpose, as by this time the attack on the extreme left of his position was being delivered, and a heavy fire of guns and musketry showed the enemy to be in overwhelming force. Detaching his guns at the flank, now so seriously threatened, he endeavoured to stay the tide of the advancing foe; but Colonel Raymond had by this time most judiciously extended his line on the right and joined hands with the second brigade, and, enveloped in the smoke, the tide of attack rolled steadily forward. At this moment a troop of lancers executed a dashing charge along the front of the position, taking the defenders in flank. It was a prettily executed movement, but, had bullets been flying, they must have been annihilated to a man by the fire of their own friends, which, at this point, was very hot. As was said of the Balaclava charge, "*C'est magnifique, mais ce n'est pas la guerre.*" However, the gallant little band of defenders accorded the troop a lively reception, too, and thus the field day was brought to a conclusion. After dinner the Cavalry and Engineers had a tug-of-war, which caused great excitement, the Engineers coming off best. A general feeling of regret was experienced that the training was over and that time and means could not be spared for a few days' longer work. The daily Press were unanimous in stating that there is no doubt but that under a course of training of equal duration with that accorded annually to the English Militia regiments, the Colony would possess the nucleus of an army equal to any in the world. The material is here, and the machinery only requires keeping in order. "*Si vis pacem para bellum,*" in these days of general unrest, is worthy of being borne in mind. Those whose memories carry them back to the days before 1859, when the formation of the army of Volunteers in England put an end at once and for all to the alarms as to foreign invasion, which were of periodical occurrence, must feel that the knowledge by any possible invader of the existence in these colonies of a considerable body of men trained to arms whose courage in no way belies their descent, will be the most effectual means of securing our shores against a hostile demonstration. In a rifle match with a team from the Wagga Wagga Company, 1st Regiment of Infantry, on the 1st May, the Engineers lost by 14 points. On the 10th May Lieutenant Stuart-Cansdell passed with honours an examination for the rank of Captain, and Lieutenant Copeland, who was on probationary service, also qualified for the position he was holding. The Engineers won by 45 points a shooting contest with the Sydney Civilian Rifle Club on the 15th May, and on the 5th June, in rifle matches with the Partially-paid Artillery and the Naval Artillery Volunteers, the Engineers lost the former by 5 points and won the latter by 19 points. In another shooting contest on the 19th of the same month, the Sydney Civilian Rifle Club defeated the Engineers by 80 points. Major Parrott obtained twelve months' leave of

absence, on the 26th June, to enable him to visit England, and during the same month Major Penrose, R.E., gave his second lecture, the subject being "Obstacles." At the annual inspection of the corps by Major-General Richardson, C.B., on 3rd July, exactly one hundred officers and men were present out of a possible 108. In a contest with the Ballarat Corps of the 3rd Battalion of the Victorian Infantry on the 15th July, at the Paddington Butts, the Engineers won by 6 points. The scores made in this event, artistically and emblematically illuminated, were framed in honour of the occasion, each member of the respective teams receiving a photographic copy as a souvenir. The original is still preserved at the Dépôt of the Field Companies. On the same occasion two other matches were fired with a Sydney Civilian team and the Partially-paid Artillery, the Engineers winning by 19 and 41 points respectively. In September Major Penrose, R.E., delivered his third lecture, the subject being "Shelter-trenches." In November the offices of the Corps were removed from O'Connell-street to the Victoria Barracks, where, at the Dépôt, the 28th quarterly lecture, being the fourth by Major Penrose, R.E., was delivered on 28th December. The lecturer, discoursing on "Military Bridging," explained the various types and classes of structures, and after pointing out the general principles of construction, dwelt at considerable length upon the materials employed on service in the field. Major Penrose also specially referred to the knotting of ropes and lashing of spars, and with the assistance of Sergeant-Major Masters gave some practical examples of the work. The details of the subject were minutely explained, the lecturer illustrating his remarks by reference to several coloured diagrams, drawn by one of his staff. Prizes for modelling this year were awarded as follows:—1, 3 and 5, *Caponier*, *Sentry Box* and *Chevaux-de-frise*, Corporal Walters; 2 and 6, *Single-sling* and *Single-lock Bridges*, Lance-Corporal David Tate; 4 and 7, *Shelter-trench* and *Shelter-pit*, Lance-Corporal Gumley. Two other models, a *Charger-pit* and *Section of Fieldwork*, were produced, but not placed for competition. During this year the Engineers were engaged in eleven rifle contests, of which six were won by them. The monthly attendance on the Range averaged 23, and some very excellent individual scores were recorded. Sapper C. Symons made two scores of 61 each off the gun, Corporal Quantock making two of 60 and one of 64, out of a possible 70, and a 95 out of a possible 105. Sapper H. Heness and Lance-Corporal D. Tate, also distinguished themselves in this respect, the former making 62 out of a possible 70, and the latter 63 and 66. The corps was fairly represented in the Rifle Association matches, and had the very creditable position of second place on the list of two important contests. The musketry report showed that out of 29 members who presented

themselves, 13 became marksmen, Sapper H, Heness being the best shot in the corps. The fortunate recipients of prizes for shooting presented by the officers, ex-members and other friends, including Messrs. A. Hordern and Sons, were:—Lance-Corporal D. Tate (3), Sapper Mulhall (2), Sapper John Thomas Barron, Sapper Denis Sullivan, Corporal Quantock, Sapper Heness, Sergeant Parry, Corporal Thomas Roberts and Sapper Symons. A novel inducement to non-commissioned officers and men to turn out in strict accordance with service regulations was inaugurated by the officers, who offered prizes for the two best dressed men. These were secured by Corporals Stephen French and Alexander Sellar. The fact of there being so many well up to the mark in this contest, necessitated very nice discrimination, but as the practice apparently engendered a spirit of envy it was discontinued. The value of prizes awarded this year exceeded £51.

CHAPTER XVII.

On the score of economy, the Engineers, as well as other corps and regiments, suffered a reduction in point of numbers from the 1st January, 1887, the strength being cut down to 100 men. Seven days subsequently Corporal Charles Arnold Cowlands was promoted to the rank of sergeant. Two teams of the Engineers competed with two teams of the Moss Vale Company Volunteer Reserves, one rifle match taking place in the morning and the other in the afternoon of Anniversary Day, the 26th January, the Engineers winning both contests by 103 and 9 points respectively. Lieutenant Stuart-Cansdell presided at the fourteenth annual meeting of the Rifle Club on the 29th January, when Sergeant Ayton was appointed treasurer and Corporal Quantock was re-elected match-captain, and also nominated to represent the corps in the Council of the Rifle Association of the Colony. On the 3rd February Sergeant-Major Masters was promoted to the rank of warrant officer. At the Easter encampment commencing on the 9th April, and again pitched at Loftus Heights, National Park, the training occupied nine days in lieu of six, as formerly. The Engineers were the first of the troops to arrive on the ground, at eight o'clock on the morning of Good Friday. The officers present were Lieutenant-Colonel Rowe, Lieutenants Stuart-Cansdell and Copeland, with Warrant Officer Masters; 86 attending out of a possible 93. As usually the case at these trainings, the corps was first busily employed in the construction of camp requirements and drainage; but on the second day they com-

menced, at the rear of the camping-ground, the construction of a series of fieldworks, of all forms of drill or work the most interesting to the general public. These works were designed to protect the camp from an attack of an enemy advancing from Wollongong by the Main Southern-road passing through the position occupied, which was naturally a strong one, and if well defended would be almost impregnable, for, on the extreme left, was a wide and deep ravine, in front, open ground, whilst on the right was a high railway embankment, which could be very easily defended, and in rear, a thick wood. Flag signalling was also engaged in, and attempts were made to communicate by heliograph from the heights about a mile and a half to the south-west of this camp with the other camp at Middle Head, but, owing to the haziness of the atmosphere, without success. Until late on Sunday evening the weather was beautifully fine, but a strong breeze suddenly sprang up from the southward, and rain soon set in. Notwithstanding this, the Engineer Corps, accompanied by several companies of the Volunteer Reserve Rifles, proceeded with the construction of the fortifications, the former company being engaged upon the large earthworks, whilst the latter corps, under the guidance of the non-commissioned officers of the Engineers, were employed in making shelter-trenches. On Tuesday the corps, with a company drawn from each of the four infantry regiments, continued this work in spite of the very wet weather. It is interesting to note the difference in the manner in which a trained sapper and an average infantryman attack this kind of work. The latter, full of zeal, goes at the work with a rush, handling his pick and shovel with great rapidity, but only for a few moments, as he speedily becomes tired, and has to rest awhile. The engineer, on the contrary, goes about the task quietly, moving the tools with a slow and even stroke, which he is able to continue for hours without much of a spell, but yet accomplishes far more work than the untrained soldier. The rain still continued to pour down in torrents, and Wednesday in the camp was a *dies non*, no adjectives in the English language short of absolute profanity being sufficiently strong to describe the state of the weather. Rain, rain, rain, and only such rain as is met with in tropical countries, a steady, hard, continuous downfall drenching everyone exposed to it. All parades were at last abandoned, and no work whatever done, the surface of the ground being covered in patches with sheets of water. There was scarcely a dry space even under canvas, camp fires were all put out, and the kitchens had to be covered over with sheets of corrugated iron before any cooking could be done. But this was not all. The water supply became, strange to say, endangered, for the heavy rainfall burst the drain which had been dug for the purpose of preventing the soakage from the unemployed men's camp in the vicinity from

flowing into the reservoir and polluting the water supply, and a party of 10 engineers were sent out to repair and deepen the trench so as to prevent the recurrence of such a catastrophe. The ground was now a veritable quagmire, but the troops to a man scouted the idea of breaking up camp. On Thursday morning, on awakening, all were agreeably surprised to miss the by-this-time very familiar patter of the rain drops on the tent-roofs, and to find that the weather, after four days' incessant rain, showed unmistakeable signs of clearing up. Work was recommenced, the Engineers, again accompanied by a company detailed from each of the infantry regiments in the early morning, forenoon and afternoon parades, being engaged on the earthworks and their adjuncts. The shelter-trenches and rifle-pits which had been partly excavated from soft, sticky clay were naturally found to be full of water, rendering the completion of the job a difficult matter, some considerable time being lost in draining them in order that they might be used on the morrow. Compass surveys during this very inclement weather were made by Lieutenants Stuart-Cansdell and Copeland, who plotted plans of the works, and furnished Colonel Rowe with sketches for distribution to those officers who were to command detachments in the defence of the camp at a forthcoming sham fight. The fieldworks when completed consisted of two single-gun epaulments on the right and left flanks respectively, one double-gun epaulment in rear of the shelter-trenches on the left of the position, one gun-pit situate in line with the centre trenches, two redans in front of the trenches, right and left of the centre, four long shelter-trenches on the same alignment, and a redoubt. Some few hundred yards away in advance of all these works were 35 shelter-pits and an abatis to cover the breaks in the trenches left for the ingress and egress of the artillery. Trees were felled and cut for the abatis. In front of the shelter-pits were wire entanglements. The gun epaulment on the extreme right of the position was placed in an excellent manner, commanding the railway overbridge half-a-mile away, the railway itself, and the only roads approaching the camp, so that it was one of the strongest points of the defence. Fieldworks of such an extensive description had never been attempted by the corps before, and the experience gained by such operations was of much value to the troops generally. The redoubt referred to in rear of the centre of the position, a great rallying point for the defenders, was, however, but only partly carried out, as, in consequence of the delay caused by the heavy rain, time did not admit of its completion. The redans measured 500, the shelter-trenches 1,200 and the epaulments 50 lineal feet. The redoubt was traced with a face of 110 feet and two flanks of 80 feet each. These works, carried out in a short space of time, and under such disadvantageous circumstances, reflected great credit on all concerned. Surgeon G. F. Dansey,

the Principal Medical Officer, and Lieutenant Copeland, who were appointed to inspect the neighbourhood with a view of ascertaining whether any more suitable sites for encampment were to be found, reported a spur of sufficient area to accommodate the infantry, situate about 500 yards to the south-west of the bridge over the railway, and distant about 1,500 feet from the works thrown up by the Engineers, and which, from the contour and nature of the ground, with systematic drainage, would form a good camping place. There was also found high ground situate to the south-east of the bridge before mentioned, and which would accommodate the cavalry and artillery. The 16th April, the eighth day of the training, was the gala day, and favoured by beautiful weather. In the sham fight, before His Excellency the Governor, Lord Carrington, the field-works already described were held by the Engineers, who were assisted in the defence of the camp by 150 Infantry and a battery of Field Artillery under Captain H. Chapman, the whole being under the command of Lieutenant-Colonel Rowe, whilst the attacking force comprised a troop of Lancers, the Permanent Artillery Field Batteries, and the 1st and 2nd Brigades of Infantry, numbering 1,800 men. The 2nd Brigade, consisting of the 1st and 4th Regiments under Lieutenant-Colonel T. M. B. Eden, attacked the right of the position, the 4th Regiment occupying the extreme right, and the 1st Regiment being more to the centre of the position. The 1st Brigade, under Colonel J. H. Goodlet, consisting of the 2nd and 3rd Regiments, advanced against the left flank of the defences, the 2nd Regiment being on the extreme left and the 3rd Regiment in the centre of the position. A party of signallers from the Engineers was stationed on the hills to the right, to communicate the movements of the enemy. The defending artillery were posted in advance of the position in epaulments, and pickets were thrown out some distance in front to meet the attack of the enemy. In order to prevent the railway bridge on the right of the position from being made use of, it was ticketed as being blown up and rendered useless. The attacking infantry advanced in extended order over the hill on the right and up the gully on the left, and as soon as they came within range a smart artillery and musketry fire was opened on them from the defenders. This was replied to with vigour, and the defending artillery were soon compelled to withdraw from the epaulments and retire within the trenches. The attacking force, advancing in good order, exposed themselves much less to the enemy's fire than on previous occasions. After an immense amount of firing had gone on, the trenches were eventually captured and the defenders driven back into the imaginary redoubt, from whence they rallied, recaptured the trenches, and the fight was over. The cavalry acted as scouts and cut off a body of the defenders on the left. They afterwards rode into the entrenchments, but with what object did not appear

as, had the warfare been real, not one of them could have got in alive. The only actual result of their achievement was to frighten and seriously inconvenience a number of visitors who were watching the affair. Thus the cavalry, still venturesome, repeated their peculiar tactics as exemplified at the training of the previous year. Early in this affair Lieutenant-Colonel Rowe's horse bolted, making straight for the steep ravine, but the gallant officer retained his seat and brought his steed in safely. The wind being light, the smoke at times hung over the mimic battleground so as to totally obscure proceedings. A very large number of visitors came down by special trains during the morning and watched the proceedings from the rear of the trenches, their presence often hampering the movements of the defending forces. The sham fight lasted but forty minutes. The camp broke up on the following day. Even the adverse weather was not altogether a disadvantage, as it gave the troops a practical knowledge of the disagreeable side of campaigning, and taught them how to make themselves as comfortable as possible under such circumstances. It also demonstrated that our colonial citizen force is made up of men who possess the true British grit, for the contented and cheerful manner in which they behaved during all the miserable wet would have been creditable to any regular force. This encampment was the wettest ever held in New South Wales, exceeding in this respect even the once famous one at Ham Common, in 1873; but despite this fact it was also one of the most orderly ever known in the Colony. The daily Press, in criticising generally this course of training, remarked:—"The Engineers have had an opportunity afforded them of constructing fieldworks on an extensive scale, although the weather somewhat restricted their operations, and they have proved that they are capable of both planning and executing such works in an efficient manner. It is to be regretted that the Engineer Corps, one of the most useful regiments in the Colony, is so small, as instead of comprising only one company of 100 it should consist of at least 500 men." On the 5th May Corporal William Harries was promoted to the rank of sergeant. To show how the corps still laboured under great disabilities, it must be mentioned that a very long time had elapsed since a requisition for material, principally light pine spars for practice in bridging, had been furnished to the military authorities. To this request, dated as far back as the 31st October, 1884, a reply was received on the 30th July of the following year asking if these spars were still required, an answer in the affirmative being immediately given. However, four months subsequently, the correspondence was again returned, suggesting that a fresh requisition and tender be made out. This was accordingly done at once, but after another fourteen months' delay the officer commanding the corps was informed that there were no funds available



CAPTAIN CHARLES STUART-CANSDALL, V.D.

for the purpose, and that the matter must stand over; and when, after all, the spars were forthcoming, they were not of the kind specified, being much too heavy for practising with. Of the very many suggestions, too, brought forward from time to time by the Engineer officers in the interest of the force generally, was one that permanent light fieldworks might be advantageously carried out upon Government reserves on points of vantage around Sydney, especially along the coast between South Head and Botany Bay. It was claimed that by this means the time and labour usually expended in erecting and then demolishing works at the dépôt would be better served, the men become more practically acquainted with their various duties, and some permanent and necessary defences economically carried out. These ideas had been previously mooted (in 1884), and found favour with the Commandant, but, nevertheless, to no purpose. On the 23rd July, at the annual inspection by Major-General Richardson, C.B., who was accompanied by Major Penrose, R.E., the corps mustered to the number of 80, the four officers being present. The customary examination was made, followed by some infantry movements. The corps now had added to its premises, at the Victoria Barracks, a sand-modelling shed, which formed a useful adjunct to the establishment. The construction of this annexment had been sanctioned by the authorities at the oft-repeated solicitations of Lieutenant-Colonel Rowe and his officers prior to the advent of Major Penrose, R.E., who acquiesced in its desirability and accelerated its completion. This building, 86 x 42 feet, of timber and iron, was erected at right angles to, and at the northern end of, the School of Military Engineering founded in 1880. Within the former structure, the Commandant, on the occasion of this inspection, reviewed the several works modelled to one-quarter full size, conspicuous amongst them being two gun-pits closed into a battery, the interior slope of the work being revetted with gabions; also a four-hour breastwork revetted with gabions and sandbags. To the rear of the buildings were seen stockades, revetments and obstacles of various kinds. The whole dépôt presented a clean and neat appearance, the plans, diagrams and models being arranged in good order, and the tools, implements, appliances and material in excellent condition, bearing evidence of having been carefully looked after, and reflecting great credit upon the corps generally. After the inspection Major-General Richardson presented prizes and badges to the successful competitors in modelling and shooting for the previous year. Among the latter trophies were those presented by Mr. Haining, late sergeant in the corps, and Mr. Samuel Hordern. Captain McCutcheon, of the 1st Regiment of Infantry (afterwards Major on the Reserve List, and for some time the very able honorary secretary of the United Service Institution) took several very good photographs of

the company during the inspection. On the 5th August Sergeant Ayton was appointed sergeant-major and Corporal John Tait was promoted to a sergeancy. Major Penrose, R.E., gave a lecture on "Coast Defence" on the 4th November, to which the officers of the whole Military Force were invited, and many attended.

It having been reported, about this time, that the Rifle Butts would shortly be removed from the Paddington Range, the officers of the Engineer Corps were fully alive to the question of retaining that ground for practising the military in the construction of minor fieldworks, as, in the opinion of competent authorities, such technical training is absolutely necessary, and must be constantly obtained by troops, instruction in artificial cover thrown up by means of the pick and shovel being nowadays quite as essential as in rifle-shooting, sword and bayonet exercise or company drill. The site referred to, being a very suitable one for the purpose, because of sufficient area and easy soil, in a central position and adjacent to the Barracks, would involve the Government in no expense whatever; besides, its use as suggested would not interfere with the planting of trees on the boundaries, so that, if necessary, at some future time the ground might be thrown open as a recreation common. Park land around the Rifle Range was not available, because to break such ground would render it dangerous to pedestrians and unfit for games and sports. The cottage upon the Range, too, it was urged, could with economical advantage be utilised as a residence for the Engineer Staff-Instructor, who could have charge of the necessary entrenching tools, which should be deposited there so as to be ready for distribution at drill. At regimental parades non-commissioned officers of the Engineers could assist the instructor in the supervision of the work, as at the Easter encampments. These suggestions were, as will be seen further on in this history, subsequently carried out, but upon a very much more extended scale.

In his report upon the Defences of New South Wales, presented to Parliament by command on the 30th November, Major-General Henry Schaw, R.E., C.B., stated:—"That the Engineers are a valuable body of men, who would be of great service in the construction of field entrenchments and obstacles, and in the numerous services connected with water supply, roads and other works of the same character required at encampments." And in the annual report upon the military force it was stated:—"That the drill and work carried on by the Engineers are good and sound, for in addition to the modelling shed, which offers special facilities for instruction, the corp's requirements are of a nature to be easily supplied." Extremes meet, it is said; probably this accounted for the limited supply of necessaries obtained up to this period of the corp's history!

This year's modelling prizes were awarded as follows:—1, *Bastier Pump and Tanks*, Corporal Walters; 2, *Camp Kitchen*, Sergeant Cowlands; 3, *Road Bridge*, Corporal Gumley. In default of sufficient competition the balance of the prize money offered by the Government was returned to the Treasury, and for the second time. Shooting was suspended for a considerable part of this year owing to a limited supply of ammunition, and also on account of the temporary closing of the Paddington Rifle Range, which was considered to be in dangerous proximity to the newly-formed Centennial Park. To these facts, indeed, was attributed the falling off in the shooting proficiency of the whole military force. Winners of the prizes offered by the officers of the corps and other donors were as follows:—1, Sapper James E. Bint; 2, Corporal Quantock; 3, Warrant Officer Masters; 4, Corporal Gumley; and 5, Sapper Mulhall. As regards class firing in musketry instruction, 37 members (of which number 20 were but recruits) underwent the usual course, 13 qualifying for the marksman's badge, Corporal D. Tate proving himself to be the best rifleman.

CHAPTER XVIII.

On the 24th January, 1888, the corps was represented at the ceremony of unveiling the statue of Her Most Gracious Majesty the Queen. This was erected near St. James' Church, Hyde Park, Lord Carrington, accompanied by Their Royal Highnesses Prince Albert Edward of Wales and Prince George, performing the function in the presence of an immense concourse of people. In order to obstruct as little as possible the view of the general public, small detachments only of every corps or regiment were ordered to parade as a guard of honour, Lieutenant Stuart-Cansdell being detailed to attend with a party of Engineers. Lieutenant Colonel Rowe presided at the fifteenth annual meeting of the Rifle Club on the 12th March, and presented prizes and badges for the modelling and shooting of the previous year. A vote of thanks was upon this occasion accorded Corporal Walters for his presentation to the corps of a very ingenious telescope tripod invented and made by himself. Corporal Quantock was appointed assistant secretary, and Sergeant-Major Ayton was re-elected treasurer. Upon this occasion, too, Major Parrott, who had returned to duty on the 26th May previously, gave, by request of his brother-officers, an interesting address concerning defence matters, particulars having been acquired by observation

during a recent tour round the world. In a triangular rifle match under the prevailing conditions, contested with the Scottish Rifle Volunteer and the Ashfield Volunteer Reserve Corps on the 3rd March, the Engineers lost by three points only, their opponents scoring equally. A fortnight subsequently Sergeant Cowlands, a very energetic and reliable man, was compelled to relinquish duty on account of failing health, Corporal Quantock being promoted in his stead. The annual continuous training again occupied nine days, commencing, as usual, on Good Friday morning. The Engineers, mustering to the number of 94, out of a strength, on paper, of 100, were encamped with the field force on the Paddington Rifle Range. The manœuvres carried out were of marked importance, as a departure from the programme of all previous encampments. They aimed at two essential objects—acquiring a tactical knowledge of the country, and training the troops in the method of operating therein. Much useful work was done, because in these operations the force traversed and systematically worked over the country surrounding the approaches to the city from Botany, La Perouse and Long Bay, and also obtained some valuable information in the Hawkesbury district, as well as in the left rear of the Middle Head batteries. This afforded the troops the opportunity of familiarising themselves with the ground likely to be selected by an enemy in an advance on Sydney. The exercises and manœuvres were thus of more practical use than those usually carried out at camps hitherto removed from the possible theatre of operations. The Engineers daily accompanied columns from the several Brigades engaged upon the defence of the positions occupied. The approach to Sydney from La Perouse is by a splendid road, running through hilly country, covered with dense scrub, broken by swamps and abounding in military positions which create a tactician's paradise. The entrenchments chiefly constructed during these manœuvres were light fieldworks, such as shelter-trenches and rifle and gun-pits, in some cases augmented by dummy entrenchments formed by erecting canvas screens three feet high. These were held in position by being hooked on to stakes slightly inclining outwards from the vertical and driven into the ground at intervals of two paces, or five feet apart. This defence of mushroom growth was never very satisfactory, inasmuch as upon a windy day it was very difficult to keep up, and, contrary to the desired aim, always conspicuously displayed to the attacking party the whereabouts of the entrenched positions. Some trouble was also found in hastily gathering up the articles of store thus used when retiring in a hurry, whilst, also, the infantry, failing to grasp the situation, either occupied the ground in front of the screens, or else when in rear often fired through the canvas. Had this material been painted scrubby green, and placed over and upon light batten.

profiles representing the sectional dimensions of the parapet, it would possibly have answered its purpose to better advantage. Still, as it was, it saved time. These works were principally placed when defending such positions as the head of the Gorge leading to Long Bay and on and around Constitution Hill to the right of the Bunnerong-road. In default of sand-bags, the Engineers hit upon the useful expedient of making loopholes with sprigs of brushwood. Marches were often made during this training for distances from 15 to 30 miles in a day of 12 hours. On one occasion a large carpet snake, over 7 feet long, was found by a sapper on one of the hills occupied in the defence, and there was some talk of letting it loose among the enemy. No doubt it would somewhat demoralise the attacking party if they found themselves in a dense scrub swarming with snakes, but, on the other hand, this might be simply supplying the enemy with forage. In this case the unfortunate reptile suffered death by sword and rifle, and was brought away as a trophy, though in some haste, for the enemy had driven in the defence. On the 5th April some engineers, as signallers and pioneers, accompanied a flying column to the Hawkesbury district, in the vicinity of Cowan Creek, marching to Redfern railway station, thence by special trains as far as Hornsby Junction, whence they marched to Gordon and manoeuvred for some hours. A second party of the corps proceeded with another column to Botany upon similar duties, while the balance of the men who remained in camp were exercised in the construction of a gabion and sandbag revetment. An incident exemplifying the *esprit-de-corps* prevailing in the Engineers occurred during the building of this revetment, which had occupied the greater part of the day. The work had just been completed, when quite a third of it suddenly collapsed, and became a confused mass of gabions, sandbags and earth, owing to the subsoil of the ground upon which the revetment was erected proving to be a quicksand. At this juncture—and it wanted but half-an-hour to the time fixed for the inspection—the officer in charge, after just a moment's reflection, and without saying a word, implying that example is better than precept, took off his coat and immediately set to work to repair the damage. One by one the men followed their leader, and at a few minutes before the appointed time of inspection the work was satisfactorily accomplished. Signal parties with heliographs connected the camp with a station on a hill behind the Randwick racecourse, and kept up communications with the troops at Botany. On the following day, the whole of the field force proceeded to join the Artillery and Torpedo camps at the various batteries on the north and south sides of the harbour to repel a sham attack upon Sydney by the Naval forces. Marching from camp to Woolloomooloo Bay, they went thence by steamer, and the Engineers, under the

command of Lieutenant-Colonel Rowe, were divided, half working on the crown of the ridge, near the junction of the Military and Spit roads, the remainder proceeding to the ridge overlooking and in rear of George's Head. At each of these places a redoubt was formed in zareba-fashion, shelter-trenches being thrown up in exceedingly quick style, and so well masked in construction as to present little difference in appearance to the surrounding bush. On the last evening of the training an entertainment was given in a large recreation tent by the Engineers and a few comrades of the Infantry. By this means a large fund was raised in aid of a sergeant who had served ten years in the corps. In response to this kindness, he in writing expressed grateful thanks for the sympathetic and practical assistance rendered, a long illness having prevented him from following his trade. On the last day the corps demolished the works they had made within the precincts of the camping ground. As usual first in the field and last off, the Engineers marched away from their late regimental parade, and when passing headquarters lustily cheered their General. The corps took advantage of the splendid weather throughout this training to put the heliograph in operation, and signal stations were taken up when manœuvring at Long Bay-road, connecting with a party on Farm Hill, outside Randwick, thence to the Waverley reservoir, and from there to Middle Head camp. From the latter place Major Penrose, R.E., wired to Lieutenant Stuart-Cansdell suggesting arrangements for the conduct of signalling, and the receipt of the order was acknowledged by heliograph, a number of messages being transmitted daily. The necessity for a properly equipped telegraphic service was now much felt by the corps. Major Parrott had succeeded in getting together a good equipment of field telegraph for service with the Contingent to the Soudan; but when he came back none of the plant was, as expected, handed over the Engineers for their use. It had been suggested, too, at this period, that an intelligence branch of the force should be created, as the materials were ready for immediate use, and only needed a capable grasp to unite them in a serviceable body, and also that a portion of the signal service should be attached to a mounted rifle regiment, the formation of which at this time had been advocated. In his report upon this training, the Major-General mentioned the good work which had been done in signalling and with the spade, and said "that the Engineers had proved themselves to be a thoroughly useful body of men." Rifle matches took place on 30th June and 21st July with the Naval Artillery Volunteers, the Engineers losing by 71 and 57 points respectively, and on the 8th September with the Partially-paid Artillery, who won by 7 points. Two days subsequently, in a match with the Goulburn Company, 2nd Regiment of Infantry, the Engineers were the losers by 12 points. This match took

place at Goulburn, being keenly contested throughout, the teams being entertained in the evening by Captain Henry Blackshaw and his officers. The order of merit in the prize-modelling competition this year was as follows:—1, *Single-lock Bridge*, Corporal Gumley; 2, *Section of Fieldwork with Obstacles*, Corporal T. Roberts; 3, *Typical Semi-permanent Redoubt*, Corporal D. Tate; 4, 5, and 6, *Hut, Stockade of Longitudinal Timbers and Rifle-pit*, Corporal Walters; 7, *Charger-pit*, Sapper James Poole; and 8, *Cryptograph*, Sapper Arthur Macauley. In shooting matters there was a revival, very considerable interest being evinced in various competitions as regards rifle matches with other corps, although the company was not very successful, losing six out of eight. The average attendance on the Range was only 16, but there was a marked improvement in the shooting during the latter part of the year, several of the junior members and others but recently enlisted, coming rapidly to the front as marksmen. The annual prizes given by the four officers of the corps for practice with the rifle were awarded as follows:—1, Sergeant Quantock; 2, Sapper Johnstone; 3, Sapper John Davidson; and 4, Corporal Gumley. During the annual course of class-firing 29 members competed, but only nine qualified as marksmen. Sapper George Menzies, who had but recently joined the corps, was the best shot in the company. As regards the New South Wales Rifle Association prize meeting, the corps was but poorly represented. The Major-General Commanding, in his report on the Military Forces for this year, speaking of the Engineers, said:—"They had, as usual, done good work in exercises special to their branch of the service, including the laying out and construction of fieldworks, in knotting ropes, lashing spars, signalling, etc."

CHAPTER XIX.

Lieutenant Stuart-Cansdell presided at the sixteenth annual meeting of the Rifle Club on the 31st January, 1889, when Sergeant Quantock, the assistant secretary, was complimented upon the manner in which he had conducted affairs at the various rifle shooting meetings. A vote of thanks to the officers of the corps for their very liberal donations of prizes was unanimously carried, and Sergeant Quantock and Sergeant-Major Ayton were respectively reappointed assistant secretary and treasurer. In a rifle match on the 30th March with the Scottish Volunteers and the Partially-paid Artillery, the corps lost both contests by 27 and 8 points respectively. Major Cooper Penrose, R.E., having com-

pleted his three years' engagement as Engineer officer with the General Staff, was succeeded by Lieutenant-Colonel Felician Rola de Wolski, R.E., who, having reported his arrival for service with the local forces on the 14th April, was taken on the strength of the Garrison from that date. This officer, like his predecessor, came principally to supervise the training of, and the work generally in connection with, the submarine mining defence, and during his term of office but occasionally interested himself in the duties of the Engineer Corps.

At the Easter encampment this year, pitched for the third time at the National Park, eighty-eight officers and men of the corps attended for a nine days' course of training. On the two previous occasions here the defence of the camp had been made towards the south-east and south-west respectively, but this time the position was fortified against attack from the north-east, or upon the direct front of the camp. The corps, after performing the duties incidental to the first few hours under canvas, commenced a series of earthworks and other defences, of which there were three lines. For the first of these the side ditches or drains along the branch line of railway to Loftus, extending for a length of more than a mile, were utilised as shelter-trenches. The front row of tents ran almost parallel to, and 700 yards distant from, the railway referred to, and an extensive swamp situate to the east of the railway, and in front of the centre of the position, also naturally formed a good obstacle. From here the ground sloped rather sharply up to the second line of defence, which was 450 yards in rear of the first line, and in front of, and closely skirting, the main road passing through the camping ground to Audley on the Port Hacking River. The works in the centre of this second line of defence comprised pits for four guns closed into a battery, sweeping the whole of the main approach. Flanking these defences right and left were shelter-trenches and epaulments and dummy entrenchments, the whole line extending 600 yards. The left of the whole position was flanked by the main line of railway to Wollongong and Kiama, while upon the right were deep gorges and ravines in the vicinity of the Port Hacking River. Between the first and second lines of defence were placed four dummy mines and several hundred yards of dummy wire entanglements. The left rear of the second line of defence was defended by a gun epaulment, in front of which, in line with the trenches, was another dummy mine placed under the road. This earthwork commanded the whole of the main line of railway, and also enfiladed the road running parallel with it. A few yards to the left rear of the gun epaulment was a railway semaphore, which was used as a signal observatory. Five hundred yards still further to the left rear was a line of shelter-pits covering an imaginary redoubt, which would serve as a rallying point and third line of

defence. The area of ground over which all these fortifications were spread embraced fully three-quarters of a mile square. Under the direction of Lieutenant-Colonel Rowe and his officers, these field-works were traced out by the non-commissioned officers and executed by the sappers, aided at times by a few of the infantry. A flying survey of the position defended was made by Lieutenant-Stuart-Cansdell, who plotted the various works. Lieutenant-Colonel Rowe handed this plan to Colonel de Wolski upon his arrival with the Vice-Regal party on Friday, the eighth day of the training. Upon this occasion, when great preparations were made for a sham fight, the Engineers, as usual, defended their own works, being assisted by the 3rd Regiment of Infantry and a battery of Artillery, while the attacking force comprised the whole of the Cavalry and Mounted Infantry, a couple of batteries of Artillery, and the 1st, 2nd and 4th Regiments of Infantry. The village of Sutherland, distant one and a half miles to the northward, was the point whence the attack was made on the entrenched camp. The 1st and 2nd Regiments formed the main attacking body, supported on the right by the Cavalry and on the left by the Mounted Infantry and the 4th Regiment. When the order to advance was given, the cavalry attacked the pickets of the opposing force, and successfully dislodged them, and were able to advance under the fire of the artillery guns so as to effectually drive the outposts back to the defenders' front line. The main body of infantry then came up with a hot musketry fire, aided in a very great degree by the mounted infantry, who effected a left flank movement and enfiladed the defenders' first and second lines. The cavalry took shelter near the Loftus railway junction before making an attack on the north-west guns, and eluding the vigilance of the searchers and their field-glasses, they crept up into a good position along the east side of the main line, where they commanded the redoubt, and held their opponents somewhat at a disadvantage. Meanwhile the mounted infantry were taken away to the east over some marshy and rocky ground to a range, which necessitated an arduous climb, not only up on one side, but down the other, thence into and across a valley, a feeder to the Port Hacking River, which gave splendid cover for the approach, and afforded shelter for a gallop. Within half a mile of the camp the whole body of the mounted infantry suddenly emerged from the timber, and dashed over the branch railway and up the hill to the camp. The battery at the horse camp was seized before anything in the shape of a defence could be attempted, but their further career was sharply checked by a well-directed infantry and artillery fire. Seeing that they could not take the camp on the right flank without the aid of the fourth regiment, they renewed a rifle attack, and once or twice fell back, awaiting the arrival of the latter regiment. The combined forces presently opened a sharp and continuous fire that

drove the defending force fairly into the trenches. The battle was palpably over when the fourth regiment set to work, advancing directly against them, the whole fire of the defenders having just been drawn off the enemy. The fourth regiment and the mounted infantry (now, of course, dismounted) were eager to charge and save the other regiments all the risk and any trouble in bringing about the climax, but as this would have spoiled the fanciful character of the theoretical struggle, they were reluctantly compelled to await the advance of the first and second regiments, which were brought across the open ground for the purpose of display. Just as the climax was coming, His Excellency Lord Carrington rode up to the rear of the trenches, and from an elevated position secured a splendid view of the manoeuvres. A brisk fire drove the entrenched forces back into camp, and, with a yell of delight, the attacking troops rushed forward from the centre and the wings, charged the defending forces right, left and front, and established themselves masters of the situation. Had, however, the mines, the entanglements and the firing been real, a very different complexion would have been put upon the matter. The whole of the business was capitally arranged by the General and vigorously executed by the men, large numbers of whom were left scattered over the ground to represent the dead, dying and wounded. In the midst of the fire and smoke the medical staff corps were to be seen moving about with stretchers, and carrying the *soi-disant* wounded soldiers off to the ambulance waggons. The medical staff corps did their work most skilfully, and it was not a little interesting and amusing to watch the doings of this humane body of men. They coolly selected their patients out of the able-bodied fellows who lay on the ground apparently lifeless, and carried them off to the waggons, where they bandaged them up with the greatest science and attention, administered stimulants, to the great delight of the exhausted and thirsty soldiers, and drove them to the hospital. To the uninitiated the ambulance conveyances appeared to be taking real patients to the hospital, and the greatest curiosity and sympathy were aroused in some of the spectators for the men in question, a rush being frequently made to learn how the casualties had occurred, and much merriment was caused when the joke was explained and it was learned that the wounded men were *perfectly well*. Signal communication was established, during the training, with a party of the Submarine Miners stationed at George's Head, a number of heliographic messages being exchanged. The daily Press, in commenting upon the success of the camp, were unanimous in mentioning, among other matters, that :—"It would be an unpardonable oversight on the part of any observer of the camp to conclude without saying a word for the Engineers, who have maintained their character for steady industry. They are not a large body of men, but anyone who knows their

value must appreciate them highly. Their labours are always the most trying in a camp of an extensive character, and they are never without plenty to do. If they are not building bridges and making articles for the camp, they are engaged in cutting trenches, raising earthworks, surveying the country over which the troops have to pass, and a host of other things, besides filling up their spare moments in drilling. The corps, all through the camp, has shown great skill in all it has attempted. A more intelligent, active, and, indeed, ingenious company it would be impossible to bring together in the Colony." *Apropos* of the remarks already made in this history concerning the "dummy" entrenchments in vogue at the trainings of the troops, the following notes from the pen of a waggish correspondent of the *Sydney Morning Herald* in relation to their use may not be amiss at this juncture :—"The camp was partly fortified on the side towards the enemy by a strong breastwork of stout canvas, behind which the defenders concealed their strength with some artfulness. Over this breastwork they kept up a searching fusillade on the advancing foe, except in those cases where—seizing with intuitive discernment the advantages which so frequently stem the tide of battle—they lay on the ground and fired under. It is a recognised axiom in military circles that the fire proceeding from the bottom of a fortification is the most effective and galling of any. It was this consideration, no doubt, that prompted a few of the defenders to seize the opportunities fortunately afforded them by the persons who fixed the bagging."

On the 29th June there was a company match, Non-Commissioned officers versus Sappers, the former winning by 87 points; and upon this occasion Warrant Officer Masters scored 65 out of a possible 70 points. On the 20th July, in a rifle contest with the Wallsend Company, 4th Regiment of Infantry, at Wallsend, and on the 8th August with the Partially-paid Submarine Miners at Paddington, the Engineers won by 36 and 67 points respectively. The annual inspection of the corps took place on the 17th August, being the second whole-day parade of the year. There were present 84 out of a possible 88, only four sappers being absent. The inspecting officer, Major-General Richardson, C.B., with whom were Lieutenant-Colonel Mackenzie, A.A.G., and Colonel Felician R. de Wolski, R.E., was received with a general salute. Arms, accoutrements and clothing were minutely inspected and found in good order, and the General, passing down both ranks, expressed himself extremely satisfied with their smart-looking appearance. The company was then told off into parties for work as follows :—Signalling with flag and heliograph, barrel-pier bridging, lashing spars and forming frames for single and double-lock bridges, tracing gunpits and epaulments, tracing and extending working parties,

making rifle and shelter-pits, shelter-trenches, &c. Each working party was visited in turn by the inspecting officer, and the nature of the work explained by the officer or non-commissioned officer in charge in a manner that showed that they understood their work. The barrel-pier party were particularly smart, the various stores being brought up and the pier formed in five minutes. The inspecting officers, after more than two hours' observation, expressed their entire satisfaction with the condition and works of the corps, and Major-General Richardson, who had always had a good opinion of the Engineers, left the depôt more than ever impressed with them. The following was the official report:—"Signalling with flags, accurate and fairly quick; tracing and extending in shelter-trench, correctly performed; tracing gun-pits and epaulments, correctly performed; making circular rifle-pits, well done; lashing spars for lock bridges, effectively performed; barrel-pier making, well and smartly done; modelling shed exhibited most careful work.

The lecture hall at the Engineer Depôt presented an unusually animated scene on the evening of the 3rd September on the occasion of an exhibition of models and distribution of prizes to members of the corps, the evidence of whose talent and ingenuity excited the keenest admiration of the visitor. His Excellency, Lord Carrington, the Commander-in-Chief, cordially accepting the invitation of Lieutenant-Colonel Rowe and officers of the Engineers to make the presentations, fully compensated the members of the corps for the delay which had arisen on account of unforeseen circumstances in the distribution of the prizes for the previous year. The Commander-in-Chief was met by Major-General Richardson, C.B., Colonel de Wolski, R.E., Lieutenant-Colonel Mackenzie, A.A.G., and a large number of officers of the forces. His Excellency was conducted through the lecture hall, where upwards of seventy models, made to various scales, were neatly displayed. They comprised representations of field-works, military bridges, various structures, implements and instruments, and the general adjuncts to works in the field. All these models were constructed by the members of the corps, in their own time, for competition for annual prizes presented by the Government and the officers of the corps. The walls of the room were hung with numerous maps, plans, and diagrams made and used by the officers in their lectures upon technical subjects from time to time. In the sand-modelling shed adjoining were many works made one-quarter full size. All kinds of military works were shown, both in model and plan; everything in fact connected with the mechanical part of modern scientific warfare. The corps, to the number of one hundred, was put through some drill exercises on the ground, which was illuminated by torches, after which a squad built a barrel-pier, performing the task in a very short time, and in a most

effective manner. Major-General Richardson, on behalf of Colonel Rowe and the officers, thanked His Excellency for the honour he had done the corps in being present and presenting the prizes. Lord Carrington, in replying, said :—" He was glad to be of some service, even if only by his presence, but he thought he was most kindly treated by the presence of the corps, and the number of officers surrounding him. It always gave him great pleasure to accept invitations from the soldiers of this great Colony, but few afforded him greater pleasure than the occasion that night. The men before him were a most intelligent body, who came forward to do their duty at great personal inconvenience and loss, for the public good. The character of the work of such a body of men was not only valuable to themselves, it was also an instructor and educator to all the forces. In case of an invasion, the first thing would be to throw up lines of entrenchment between Sydney and Botany, and he saw before him the men who could not only do the work themselves, but who could instruct the Infantry regiments in the same duty. It gave him much pleasure to see the models, and also to witness their drill. He thanked them all for the warm reception given him, and assured them that no effort of his would be spared while among them of promoting their welfare." Vociferous cheers for the Queen, the Governor, and the Commandant brought this red-letter day's proceedings to a close. On the 28th September, in a triangular rifle contest with the Scottish Volunteers and the Newcastle and Wallsend Companies, 4th Regiment of Infantry, the Engineers lost the first by 15 points, but won the remaining two by 20 and 8 points respectively,

On the evening of the 11th October the non-commissioned officers and sappers gave their first social at Leigh House, Castle-reagh-street. The officers of the corps spent an hour or more in the dances. The entertainment was largely patronised by the wives and daughters of the members, and was a great success. On the 28th December, in a rifle match at Wallsend with the Wallsend and Newcastle Companies, 4th Regiment of Infantry, the Engineers won both by 41 and 49 points respectively. In the evening the northern companies entertained their Sydney comrades, Colonel C. F. Stokes presiding. During this year the average attendance at the monthly shootings was 19. In the course of musketry, out of 20 members, 14 qualified as marksmen, and Sergeant Quantock again secured the Crown badge. With regard to the meeting of the New South Wales Rifle Association, it is to be regretted that the Engineers were so poorly represented, but those few who competed rendered a very good account of themselves, of whom Warrant Officer Masters and Corporal D. Tate were selected to represent the English team in the International match. The scores in the various regimental matches, of which the corps won 6 out of 10, far exceeded those of previous years. The

result of the competition for the officers' annual prizes was as follows:—1, Sapper James H. Fountain; 2, Sergeant Quantock; 3, Sapper Mulhall; and 4, Sapper John Furness. The awards in the modelling competition were decided as follows:—1, *Small Double-lock Spar Bridge*, Lance-Corporal Frederick W. Pantlin; 2, *Large Double-lock Spar Bridge*, Corporal Gumley; 3 and 5, *Section of 8-inch. B.L.-Gun* and *Norton's Tube Well*, Corporal Walters; and 4, *Section of Fieldwork with 4-hour Breastwork*, Corporal Stephen French. Two special prizes were also given by the senior officers to Corporals Sellar and Roberts for *Gun Epaulment* and *Circular Trench Field Kitchen* respectively; while Corporal Walters received special mention for two *Field-Guns*, one-quarter full-size, for use in the sand-modelling shed.

At the close of the year there was laid upon the table of the Legislative Assembly a report by Major-General J. Bevan Edwards, R.E., C.B., on the proposed federated organisation of the military forces of the Australian Colonies. Referring in this report to the Engineers in particular, General Edwards, unlike his predecessor, General Schaw, who thought that the then strength of the corps was sufficient, said:—"Looking to the necessity of more numerous cadres for your forces, the Engineers should be increased and formed into three companies of 60 men each, and the equipment should be completed, and waggons provided to carry the entrenching tools and a proportion of field telegraph cables." Acting upon the latter remarks, Major-General Richardson took the initiative, for, in his annual report, he stated that the Engineers had been most usefully employed, and it was intended shortly to extend their sphere of operations by means of a small field service equipment."

END OF THE SECOND ERA.

Books must be returned within one month of date of issue. Per Reg : Post.

[illegible]

USI -LIBRARY



036171

BY SPECIAL APPOINTMENT to
The late Right Hon. Sir R. DUFF, G.C.M.G., etc., etc.



CHARLES ANDERSON,
Civil, Naval & Military Tailor

Call No. 358.2 CARV
355.091
Accession No. 13695
Title History of the N.S.W.
Corps of Engineers
Author